Soap

nd Sanitary Chemicals

. . . *fine toilet soaps*

need fine perfumes!

AT the point of sale, the perfume in your soap may constitute the difference between acceptance or rejection . . . fine toilet soaps need fine perfumes. What is more important they need the proper type of perfume . . . one which is in keeping with the product, will stand the test of time and yet be economical. All this implies years of perfuming experience.

For over a century Dodge & Olcott Company has supplied perfuming materials for a countless number of the most successful brands of toilet soap on the American market. In perfuming, like in everything else, experience is the great teacher . . . Dodge & Olcott Company knows soap perfuming and will gladly give you the benefit of their many years' experience if you will consult them.

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In the textile industry, re-treating cotton that has come out yellow because it has picked up iron from an alkaline processing solution, is an annoyance and expense that many mills are being saved by adopting Warner Caustic Soda. Its iron content is as low, or lower, than that of any caustic soda made by any method. Likewise, its salt content is reduced to a percentage that has no deleterious effect. The purity of Warner Caustic Soda may be an improvement and an economy in your application.

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CHEMICAL COMPANY ☆ DIVISION OF

WESTVACO CHLORINE PRODUCTS CORPORATION

CHRYSLER BUILDING, NEW YORK, N. Y.

Soap and Sanitary Chemicals

Reg. U. S. Pat. Office

Volume XVI
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JUNE
1940

Contents

SANITARY Products Section, which forms a part of every issue of SOAP, begins on page 75.

Published by

MAC NAIR-DORLAND COMPANY, INC.

254 WEST 31st STREET NEW YORK, N. Y.

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Keep Your Insecticide *Fresh, Strong, Clean* In A Modern Glass Container With A Closure That Always Works!

Your insecticide can't do you justice packed in an old-fashioned container that gets dirty and rusts; that allows seepage or strength-destroying evaporation. But pack it in a clean, modern *glass* container with a cap that always assures a dependable leakproof seal (like the Anchor CT Cap) and you'll keep it at performance peak until the last drop is used! (Your customers will know when they're down to that last drop, too, if you pack in glass!) Here at Anchor Hocking we have some mighty practical ideas about packaging and selling household disinfectants that we'd like to tell you about. A line or a wire will bring one of our specialists hot-footing to your desk. Send for him now. He may be able to point the way to bigger sales for you with Anchor Hocking glass containers and sure-sealing Anchor CT Caps—the unbeatable packaging combination.

ANCHOR HOCKING GLASS CORPORATION, Lancaster, Ohio
Closure Subsidiary: ANCHOR CAP & CLOSURE CORPORATION
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GLASS CAPS

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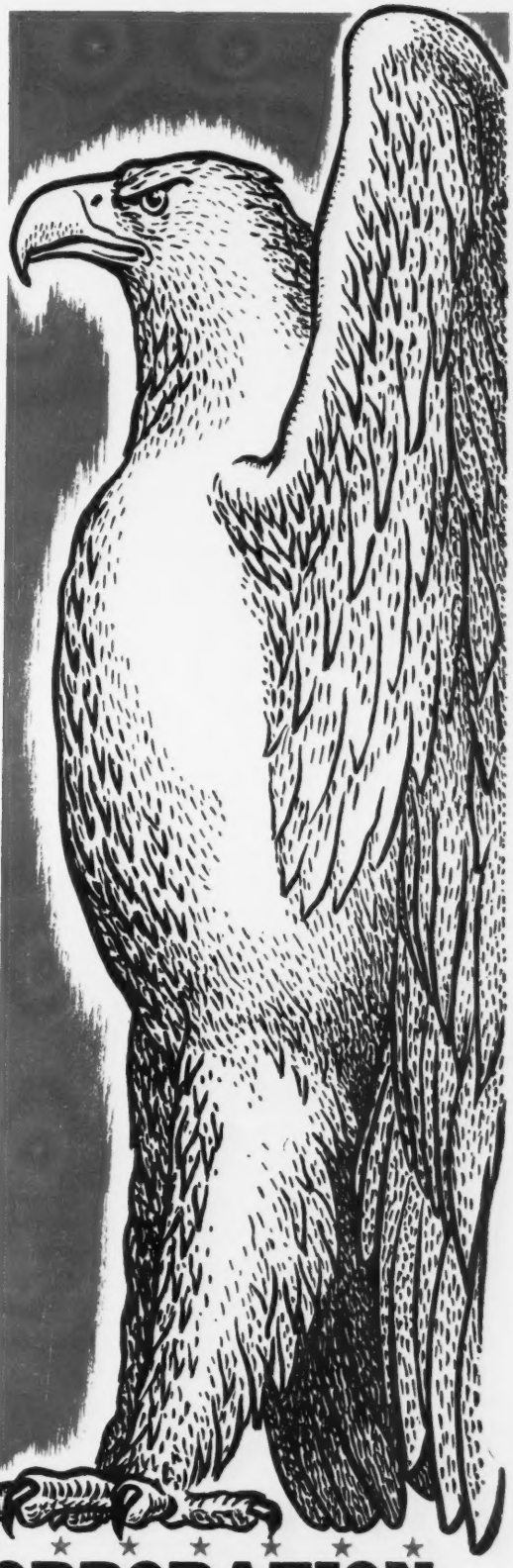

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ALSO with measurable certainty . . with a background of brilliant merchandising successes . . "NATIONAL" Containers will affix a seal of value upon *your* product in commodity exchange. ★ When buyers pause before competitive counter display "NATIONAL" Packaging *convinces* . . swings the sale . . opens the way to repeated business.

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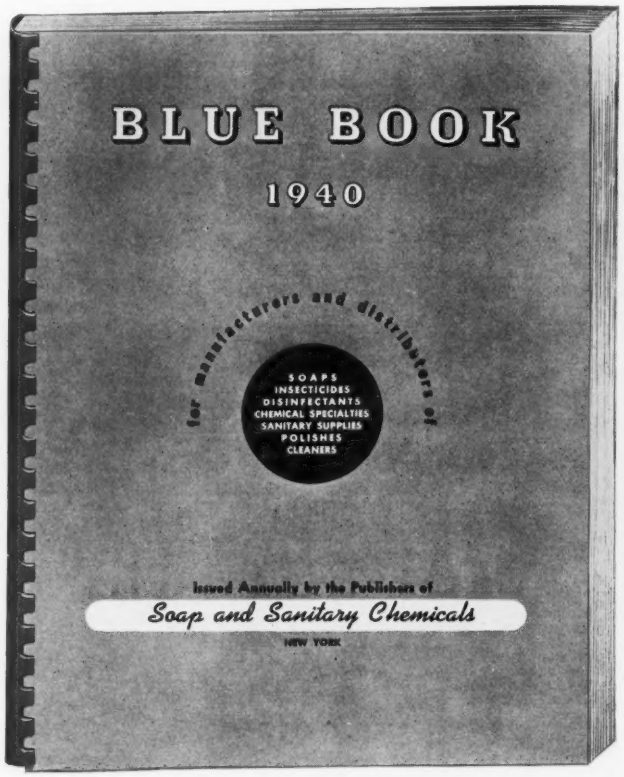
The New 1940 BLUE BOOK

is an invaluable reference volume for every soap and sanitary chemical firm, —that will find service every day in the year. Keep your copy readily available for day-to-day use. Familiarize yourself with the wide variety of useful information it contains.

If you have not received a copy of the new BLUE BOOK ensure your getting one at once by entering a subscription to Soap and Sanitary Chemicals *now*. A check for $3.00—the price of a yearly subscription—entitles you to a copy of the BLUE BOOK without extra charge.



Contents of the New 1940 BLUE BOOK

Soap Perfuming—A review of perfuming principles, with detailed comments on suitability of some 150 essential oils, aromatic chemicals, resins, fixatives, etc. for use in white and colored soaps.

Labeling—A review of general labeling requirements for soaps and sanitary chemicals in the light of recent changes in federal laws. Sample labels for typical products.

Soap Builders—Notes on new and old filling and improving agents for use in soaps, their incorporation in finished products and the effects they produce.

Liquid Shampoos—A study of the various types of liquid shampoos on the market, with comments on changing formulae.

Metal Polishes—A review of the various types of polishes, with typical formulae for chromium polish, brass polish, silver polish, liquid and powder type metal polishes and polish specifications.

Specifications—A review of U. S. specifications for soaps, polishes, waxes, cleaners, chemicals, etc. Specifications of the N.A.I.D.M. for insecticides and disinfectants.

Testing Section—Latest official methods of the National Assn. of Insecticide & Disinfectant Mfrs. and of the Association of Official Agricultural Chemists for testing the efficacy of insecticides, insecticidal raw materials and disinfectants. Included in this testing section will be the Peet-Grady Test, the Seil Method, Gnadinger-Corl Method, F.D.A. Method, Mercury Reduction Method and Rotenone Determination Method.

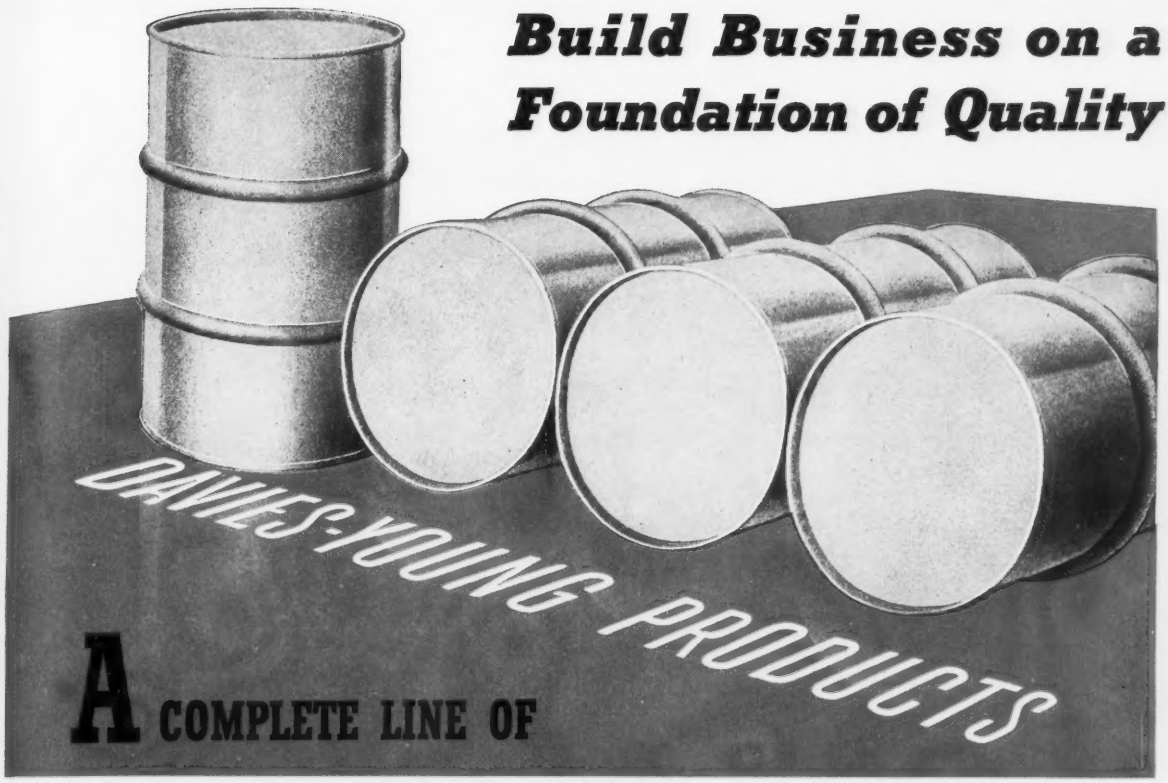
Index to Soap—A complete composite index to the monthly issues of *Soap and Sanitary Chemicals* for the years 1934 through 1939, making it easy to locate valuable technical information and reference articles.

Association Officers—A list of officers and directors of important trade groups in the soap and sanitary chemical field.

Plus a complete 125-page Buyers Guide Section listing sources of supply for a complete line of raw materials, machinery and equipment bought by manufacturers of soaps and sanitary chemicals.

MAC NAIR-DORLAND COMPANY

254 WEST 31st STREET **NEW YORK, N. Y.**



Build Business on a Foundation of Quality

A COMPLETE LINE OF SOAPS AND SANITARY SUPPLIES *FOR ALL YOUR NEEDS*

OIL SOAPS

Scrubbing soaps and cleansers made from vegetable oils, including such Special Oil Soaps as U.S.P. No. 11, Surgical Green Soap and others.

LIQUID SOAPS

Liquid (Floor) scrubbing soaps, compounded for specific types of floors—Buckeye, Sani-Scrub, Florex, Ex-Alk.

LIQUID TOILET SOAPS

Neutral Soaps, made under rigid laboratory control, insuring clearness, uniform quality, uniform soap content. Line includes concentrated Liquids and Special Soaps such as Surgical Liquid, Infants, Castile and Tincture of Green Soap.

CONCENTRATED SOAP BASES

For producing Liquid Shampoos and Toilet Soaps and Liquid Scrubbing Soaps.

LIQUID FLOOR WAXES AND FINISHES

Beamax and Cirene self-polishing waxes; Buckeye Liquid Wax (requiring polishing); Paste Wax, Dance Floor Wax; Gym Finish; Floor Seal.

POLISHES

Metal Polish, Furniture Cream, Furniture Polish.

DISINFECTANTS

Pine Oil and Coal Tar Disinfectants; Cresol Compound U.S.P., and Buckeye-Cres. Deodorant Blocks and Crystals.

INSECTICIDES

Fly Sprays, Moth Sprays, Contact Insecticide and Roach Powder.

THE DAVIES-YOUNG SOAP COMPANY
DAYTON • OHIO

THE DAVIES-YOUNG SOAP CO.
Dayton, Ohio

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Address .....
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"I'm Satisfied"

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AROSOL the Universal Fixative has answered the question.

It insures a more lasting perfume in my product. It is soap-fast and will not discolor.

The only value I receive from money expended in perfuming my product is the value at the time of its ultimate consumption."

Requests for samples on your firm's letterhead will be promptly answered.

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Ionone 100% Verona
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Hysan Blocks Hold More Perfume

To discover why HYSAN blocks are tripling jobbers' sales, expose a sample block* until it's the size of a dime . . . Note how the startling flower fresh aroma, **product of more and costlier perfumes,** exalts your senses with undiminished fragrance . . . as vibrant and breathtaking as when you removed the cellophane months before.

*Free on request.

KAPA-SAN Urinal Strainer
KAPA-SAN prevents stoppages, overflows. Kills odor at source. Easy to sell. Good repeat. Send for folder.

INDIVIDUAL WALL UNIT
A self contained deodorizing unit—block and holder. No higher in cost than any high grade block alone. Samnle free.

AIRSTREAM BLOCK HOLDER
A deodorizing block cabinet with theft-proof feature that steps up sales. No exposed screws. Holds standard 24 oz. block. Choice of rust-proof finishes.

SUPERIOR SANITARY PRODUCTS FOR PROGRESSIVE JOBBERS

The extra measure of quality in HYSAN products eases your selling job, wins and holds foremost buyers, sustains your leadership.

HYSAN
MANUFACTURING CHEMISTS

DEODORANTS • CLEANERS • DISINFECTANTS • POLISHES
INSECTICIDES • SOAPS • WAXES • FLOOR TREATMENTS

2560 ARMITAGE AVE., CHICAGO

What about Sir Walter's Coat?

RUINED! Crushed into the mud beneath Elizabeth's royal feet, the rich fabric of Sir Walter Raleigh's coat—whether retrieved by some hopeful lackey or left to disintegrate ingloriously under the heels of the throng—would never be the same.

Though few men today would copy Sir Walter's gallant gesture, garments get dirty just the same. But dirty clothing is easy to clean in this modern age—thanks to finer laundering and superior soaps... soaps that give more suds even in hard water, speed up cleansing action, produce whiter, brighter washes without harming hands or fabrics.

The ingredient in soap that has wrought such improvement is tetrasodium pyrophosphate (the Monsanto trade-name is Phosphotex). This remarkable detergent aid embodies low pH value with high emulsifying and water softening properties. Of major importance as a "soap builder," Phosphotex is also effective in bottle washing, metal cleaning, dairy cleaning, as a cleaner for most surfaces and in textile operations.

If you are interested in a detergent with extraordinary cleansing, wetting, softening, dispersing and clarifying qualities, write for further information and samples of Phosphotex. MONSANTO CHEMICAL COMPANY, Phosphate Division, St. Louis, U. S. A. District Offices: New York, Chicago, Boston, Detroit, Charlotte, Birmingham, Los Angeles, San Francisco, Montreal, London.

MONSANTO CHEMICALS

SERVING INDUSTRY... WHICH SERVES MANKIND

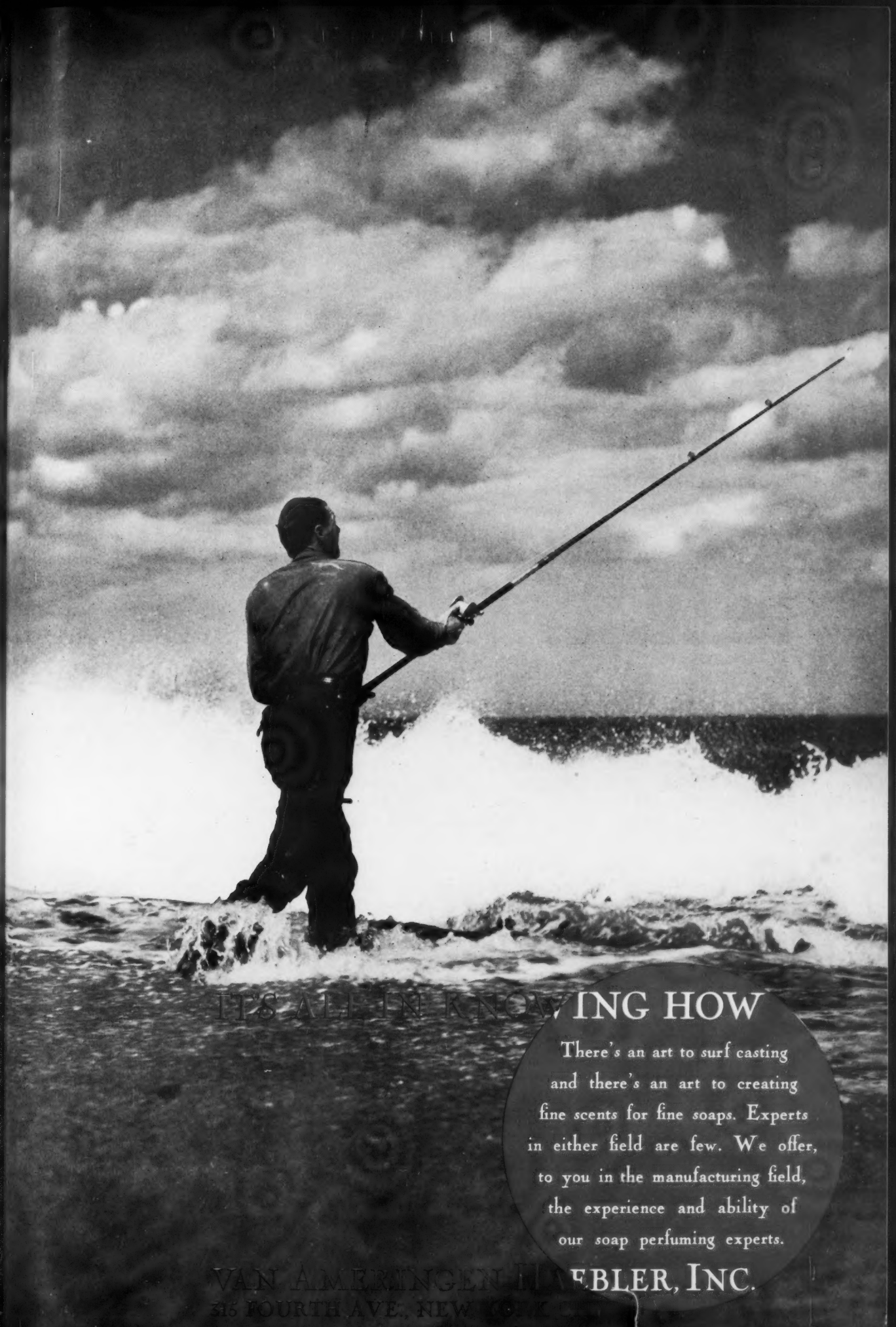
OTHER MONSANTO PRODUCTS FOR THE SOAP INDUSTRY

TRI SODIUM PHOSPHATE
Cleansing agent, detergent

TETRA POTASSIUM PYROPHOSPHATE
Soap builder, where pyrophosphate salt of very high solubility is desired

SANTOMERSE
Wetting, penetrating and detersive agent

SOPANOX
Retards rancidity and discoloration


IT'S ALL IN KNOWING HOW
There's an art to surf casting and there's an art to creating fine scents for fine soaps. Experts in either field are few. We offer, to you in the manufacturing field, the experience and ability of our soap perfuming experts.
VAN AMERINGEN HAEBLER, INC.
315 FOURTH AVE., NEW YORK

DEPENDABILITY

Few raw materials exert so profound an influence on the finished product as alkalies. Yet the manufacturer of glass, chemicals, paper, soap, textiles, food, drugs and other commodities has to take their quality pretty much for granted, once he has tested the samples on which he based his order. In accepting this responsibility, we strive at all times to make COLUMBIA Alkalies as dependable as time itself.

There are no rotten apples at the bottom of the COLUMBIA barrel. Modern testing equipment plus rigid control and conscientious supervision of every step from mine to consumer insure COLUMBIA users a product of full strength and quality. For dependability in alkalies and liquid chlorine, specify COLUMBIA.

COLUMBIA PRODUCTS for the SOAP INDUSTRY

SODA ASH—For saponification of fatty acids, neutralization of glycerine lyes, as a builder for laundry soaps, and as a constituent of soap powders.

CAUSTIC SODA — For all forms of soap products where sodium hydroxide is employed for saponification. The high degree of purity and freedom from iron salts make COLUMBIA Caustic Soda particularly desirable for white toilet soaps. Available in 76% Flake, 400 lb. drums and 50% and 73% Liquid, tank cars.

COLUMBIA

SODA ASH • CAUSTIC SODA • SODIUM BICARBONATE • • •
MODIFIED SODAS • LIQUID CHLORINE • CALCIUM CHLORIDE

THE COLUMBIA ALKALI CORPORATION
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Plant: Barberton, Ohio
CHICAGO . BOSTON . ST. LOUIS . PITTSBURGH . CINCINNATI . CLEVELAND . MINNEAPOLIS . PHILADELPHIA

Electric Endosmos

and

SOAP FILMS

IT HAS been generally observed that some soaps are milder in action than others. The reason some soaps *sting* has been ascribed to hydrolysis.

But, hydrolysis cannot be the only answer because all ordinary soaps hydrolize.

CLIFTON'S chemists have developed an interesting hypothesis based on *electric endosmos*:

According to this theory, membranes in water in slightly alkali solution would absorb some of the negatively charged particles (alkali particles). Some membranes absorb more than others. It would seem likely from this theory that bland oil soap membranes such as olive oil would absorb a larger amount and thus leave the remaining solution milder than membranes made of lauric acid soaps (cocoanut oil).

For QUALITY get in touch with CLIFTON on
POTASH SOAPS

Vegetable Oil Soaps
Liquid Hand Soaps
Green Soaps
Liquid Floor Cleansers

as well as allied products such as

Coal Tar Disinfectants
Pine Disinfectants
Furniture Polishes
Cresol Solutions
Rubless Waxes
Perfumed Deodorizing Sprays.

CLIFTON CHEMICAL CO., INC.

248 FRONT STREET **NEW YORK CITY**

THE F. P. CONSTANT MOTION CARTON LOADER

This story is about a new development on the Constant Motion Cartoner. About one unit of a machine composed of efficient, simple, positive, thoroughly seasoned and approved, working units.

The F.P. is the simplest and most efficient constant motion loader ever produced.

It is noiseless, vibrationless and unbreakable—It cannot jam.

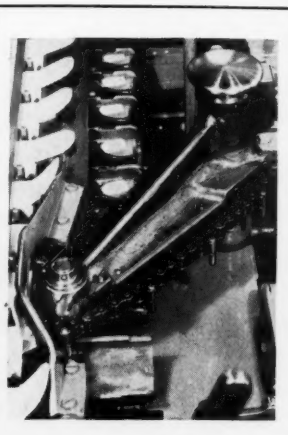
It instantly stops the cartoner and swings back clearing the bucket conveyor when a load is too large or a defective carton will not receive its load.

It can be instantly returned to working position. It has not a slide—a slide bearing—a cam, cylindrical or in other form, to be oiled, or to drop oil on material being packaged.

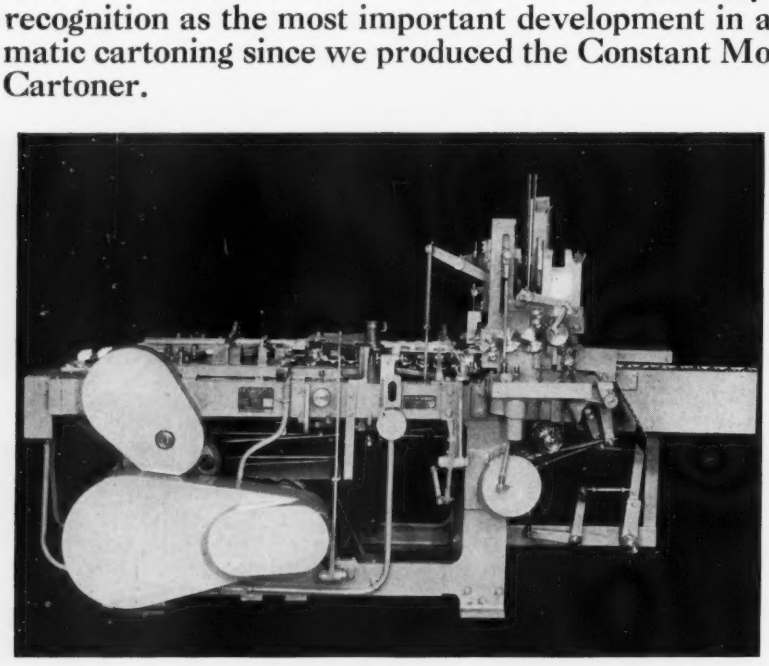
It has no mechanism extending beyond the cartoner frame to walk around—to take up valuable floor space or keep operator at inconvenient distance from the cartoner.

A cartoner with the F.P. Loader is so narrow that it will go in any ordinary door or elevator.

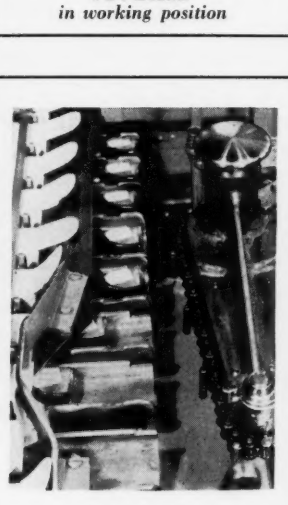
The F.P. Constant Motion Loader will immediately win recognition as the most important development in automatic cartoning since we produced the Constant Motion Cartoner.



F.P. Loader in working position



Constant Motion Cartoner with F.P. Loader for Colgate's half ounce Cue and 5/8 ounce Halo package—It is converted from one size carton to the other in 15 minutes. It folds leaflets and packages 150 or more bottles per minute. It will not jam, break a bottle or deliver an empty carton. It is camless, vibrationless and noiseless. It code dates the cartons.



F.P. Loader after being stopped by oversize load.

R. A. JONES & COMPANY, Inc.

P. O. Box 485 Cincinnati, Ohio

As the Editor sees it..

PREVENTION of dermatitis in industrial establishments and the part which the plentiful use of soap plays in this work are covered in a recent summary by the National Association of Manufacturers. It is interesting to note that the emphasis is on the frequent use of the proper soap and water, and the avoidance of strong solvents, alkalies, and abrasive soaps. The report states that "Uncleanliness of the skin is the greatest predisposing cause of dermatitis."

The extensive campaign by the N.A.M. against occupational disease of which dermatitis is the most widespread, focuses attention on bodily cleanliness and the proper type of soap. Recommendations are away from strong soaps and cleansers, which recommendations appear to be in line with the reported trend in the industry toward milder and non-irritating products, a trend which manufacturers of hand soaps cannot afford to ignore.

ATTENTION of manufacturers has been quite effectively switched away from their numerous problems of labor, labeling, and the like during the past month by the situation in Europe. So alarming has been the spread of warfare abroad, that other matters have become minute by comparison. That the world markets for all types of raw materials have been thrown into chaos has also been lost sight of as a result of the magnitude of the conflict abroad. But on the whole, American industry has not been too greatly affected as yet, due principally to our self-sufficiency of most basic materials, particularly chemicals. Whereas, twenty-five years ago under similar circumstances, American manufacturers found their supplies of many of their most important chemicals shut off, today the domestic consumer finds these materials plentiful at low prices. At least, it is one situation in a war-mad world for which we can be thankful.

UNTIL recently, the European war has had little effect on American supplies of imported soapmaking oils. But a decision of the British Admiralty to close the Mediterranean may cut down to a trickle the already dwindling shipments of olive oil which are coming through to American soapers. The uncertainties in the East Indian situation might readily lead to circumstances which could cut America off abruptly from Sumatra palm oil. On the other hand, continued control of that source by the British Navy will mean that such palm oil will still be shut off from its former markets in Northern Europe now dominated by Germany. An inevitable flood of shipments of palm oil to the United States may result from such a situation. And even Philippine coconut oil may not be beyond the possibility of later involvement in a chaos of wartime commerce.

Although for several years the fatty raw material markets have been free of severe

headaches for American soapers, the complications of war economy may bring them. No general shortage of fatty oils is likely. In fact, the reverse is more probable. But a shifting about in the kinds and types of oils used in the soap kettle, particularly in specialty soaps, is liable to happen,—and bring the war closer to the American soap factory.

AT THE recent meeting of the Toilet Goods Association, the use of the term, "cosmetic skin," in advertising by a large soap manufacturer was condemned in a resolution. The cosmetic manufacturers evidently feel that such advertising is harmful to the sale of their products. But have not cosmetic manufacturers ever suggested that the continuous use of soap on the skin might be harmful? And that perhaps "cleansing creams" might well be used to take its place and avoid untoward effects? Or that to wash the hair with "ordinary soap" is harmful, but that Plunk's Shampoo is the only path along which to retain the natural beauty and lustre of your curly locks?

Frankly, we never cared a great deal for that "cosmetic skin" copy ourselves. Nevertheless, we feel that the cosmetic industry does not come into court altogether with clean hands in their criticism of it,—sort of the pot calling the kettle black.

OPPONENTS of standard specifications for commercial products have always maintained that such specifications are more of a hindrance than a help to the reputable manufacturer inasmuch as they set up a definite target at which the chiseler may shoot. Although there is much to be said on the other side, there is no doubt but that this contention is only too true. We have seen much evidence of it in the field of soaps, detergents, cleaning compounds, disinfectants and insecticides, as well as in other products. The reputable manufacturer hews to the line, while the chiseler uses subterfuge or plain dishonesty to fool the buyer. But the fault lies not in established specifications, but in the lap of the buyer who permits himself to be taken in by impressive but unsubstantiated claims. Specifications are not a cure-all for chiseling. But they are an effective safeguard if used intelligently.

TO KNOCK one of your products in order to sell another is our idea of poor advertising. And yet this is just what a well-known soaper has been doing recently. The advertising says in effect that their new product causes no irritation to hands in dishwashing because "it is not a soap." And then, it continues, the product is "... different from even the finest soap or soap flakes because it contains no acid or alkali." And if you wonder what robbed your fingers of their dainty smoothness, "... it's the alkali from the soap you use in washing dishes."

Superficially, the statements in the advertising may be correct. But when they imply that "even the finest soap" is irritating and harmful because it contains "acid or alkali," truth becomes just a speck on the horizon. For a century or more, this manufacturer has been a producer of dishwashing soaps, and still is. Would he be willing to admit in print that he has been selling the public irritating and harmful products all these years, and that these continue to comprise the bulk of his business?

The expression, "contains no acid or alkali," in the sense in which it is used, is obviously tricky and purely a play to public ignorance. On a similar basis, why not also include ground glass and arsenic? If soap is to be damned by inference, why not do a really complete job?

POWDERED HAND SOAPS

ORDINARILY, the type of hand soap used by workmen in factories has not been considered one of the more important matters in connection with health conditions. However, during the past year, hand washing by factory employes, especially men in heavy industry and machine shops of all kinds, has been under the spotlight of greater attention by medical authorities. Studies of the question of how, when, and with what the average workman washes his hands evidently indicate that the problem is not as simple as it had formerly been considered.

Figures of the U. S. Public Health Service point out that two out of every three cases of so-called occupational diseases have something to do with the skin, even though they may not all be classed as dermatitis. Mechanical injuries to the skin, as is well known, are probably the most common form of injury. These may come from scratching, rubbing, or cutting, but all form the basis for potential infection with serious subsequent consequences. All told, it is estimated that some 20,000 workmen lose time off their jobs every year from industrial-acquired dermatoses, causing a wage loss well over four million dollars. Naturally, ways and means to reduce this loss have been the subject of considerable study, and the materials used in hand washing have had their part in these studies.

The U. S. Department of Labor lists the more important causes of industrial dermatitis as follows: 1. Constant use of oils and greases on hands and arms which interfere with the normal function of the skin. 2. Irritants and caustic substances such as alkalies, acids, etc. 3. Solvents which dissolve the natural fats and oils of the skin and remove them, such as naphtha, benzene, turpentine, etc. 4. Mechanical injuries, such as scratches, abrasions, etc. 5. Infection by disease germs, spores, or parasites present in hides, furs, silk, wastes, and other raw materials, mostly imported. To this may be added those cases caused by a certain percentage of persons being allergic to many common materials used in industry, materials which have no effect on most persons, but which may cause a dermatitis in a few.

For men working with oils and greases in machine shop, garage, rail-

roads, etc., for those handling printing inks, pigments, dyes, paints, etc. and in a hundred and one other industries where the hands become very dirty, grimy, and stained, the removal of the grime two or more times per day repeatedly over long periods is likely to have untoward effects. Ordinarily, deeply imbedded grime may be removed by strong abrasion which means actually wearing away of the outer layer of skin which has been softened by use of soap and water, for example. The use of an ordinary abrasive hand paste does just this in actual use.

The use of mechanic hand soaps of one kind or another,—the paste type being most commonly used,—has been the outgrowth of the formerly used cleaning procedure which was not satisfactory, such as washing with ordinary cake soap, liquid soap, etc. For imbedded grime, these soaps have always been too mild in action unless their use was prolonged far beyond the average time of application. Hand washing must be accomplished quickly. The average mechanic or other workman just will not take the time needed in using less effective materials. As a consequence, it has been no wonder that heroic measures in the form of strong, highly abrasive soaps and cleansers, have been resorted to, nor is it surprising that workers in paints, printing inks, and the like have preceded the strong soap treatment with the use of solvents such as naphtha, turpentine, etc. to the detriment of the skin.

Plant physicians who are constantly observing the effects of hand washing with various soaps, appear to be laying more skin troubles at the door of improper washing. At the same time, they appreciate that repeated hand washing is essential, not only to remove grime, but especially to remove irritants and other dangerous materials which are inherent in certain types of industry. Thus, the workman appears to have trouble on two sides in the matter of hand cleanliness. But it is agreed that irrespective of other factors, clean hands are the cause of less trouble from dermatitis than dirty ones, even though the cleaning is done with a strong abrasive soap.

All factors considered, it has been proved to be to the advantage of employers, especially in "dirty" industries, to insist upon adequate and proper hand washing. At noon lunch hour, and at quitting time, hand washing should be mandatory as a health measure. But it goes without saying that if such a cleanliness measure is compulsory in a plant, the employer should supply the soap. This is not only a modern gesture on the part of the employer, but is chiefly an opportunity to control the type and quality of soap used.

For years, it had been the custom of workmen to supply their own hand soap. The same was true of towels. In many plants, there were not even sinks and running water available. Workmen had to wait until they reached home before washing. But times have gradually changed. However, from out of these earlier conditions arose the one-pound tin of abrasive hand soap, sold to individual workmen as needed and usually stored in locker or closet. Because the lowest-priced hand soaps apparently gave the most for the money, they were in demand. The trend was to cheapen the product as much as possible. The fact that they might be strongly alkaline and harsh on the skin, did not matter. The call was for the cheap soaps which made it very difficult for those putting out good quality products containing a suitable abrasive and an adequate content of actual soap, and free from an excessive amount of added soda ash, trisodium phosphate, and other alkalies. But in spite of their shortcomings, the paste hand soap has been the most widely used heavy-duty hand cleaner for 25 years, and undoubtedly still is. But during the past year, a change has been noted in the hand soap market. The powdered and granular products appear to be making greater headway,—in fact, and trend in the direction of powdered soaps has brought forth some discussion in the industry.

THE hazard of skin disease in plant and factory, or at least the wider recognition of this hazard, is probably responsible for what appears to be a changing trend in hand soaps. For years, some plant physicians have been outspoken in their criticism of the wide use of harsh abrasive soaps two or three times a day by workmen. They have maintained that the thousands of minute scratches on the skin of hands and arms made by the abrasive become the entrance-way for infectious germs, and are an open invitation to dermatitis in one form or another. Therefore, plant doctors have as a rule recommended some other type of soap, ordinary toilet soap, non- abrasive powders, and particularly liquid soaps, but these have not been effective for heavy grime removal, notwithstanding their safety from the health angle.

As part of the general health crusade in industry which has been gaining momentum during the past several years, improved facilities for cleanliness among workers have made large strides. Shower baths, large and adequate wash fountains, and most important for the purpose of this discussion, free soap and towels have been made available in hundreds of plants within the past two years. Because of the attitude of plant doctors and the difficulty of dispensing abrasive pastes at wash fountains, this field has been left to liquid soaps and powders. A few special soap liquids, some containing solvents, were found useful, but the average run of liquid soaps were found not satisfactory, merely confirming what has been known in "dirty" industries for years.

Circumstances have tended to direct the soap selection for plant use to powdered products. Because they were not in favor of strong abrasives in paste soaps, physicians took a similar attitude in regard to the same materials as part of powdered soaps. This turned attention to the softer and finer mineral abrasives, and to non-mineral materials such as sawdust, other pulpy, fibrous

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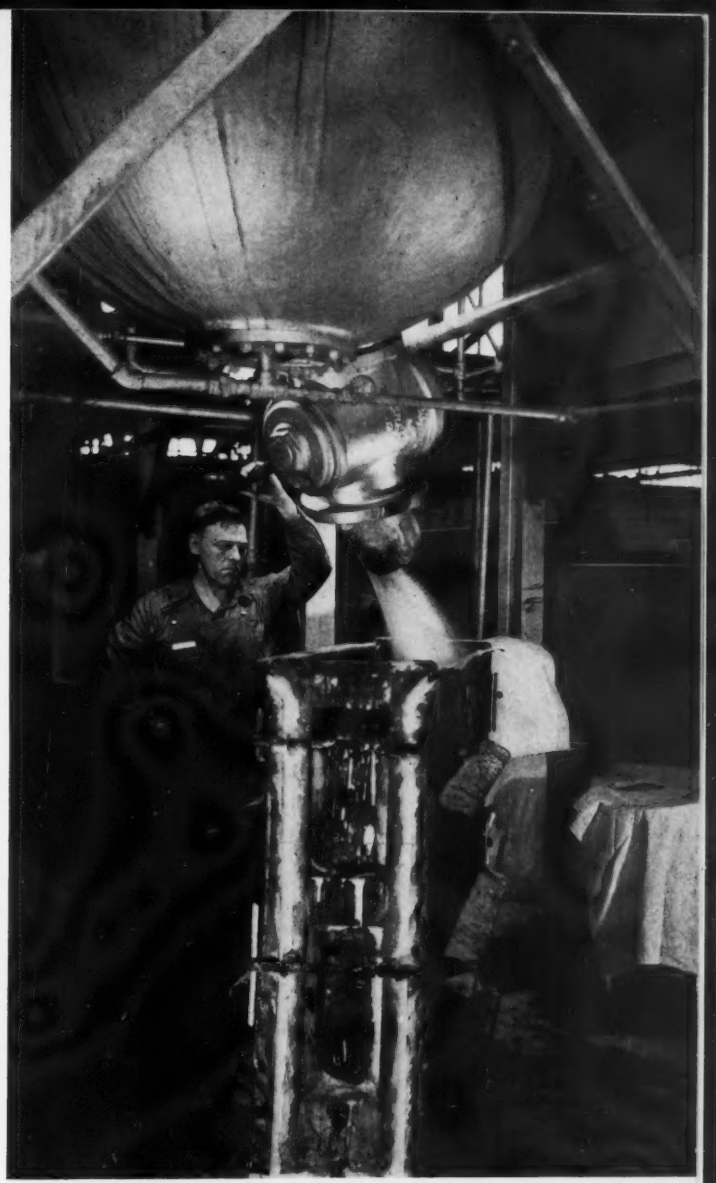
SILICATED SOAPS...

Comments on manufacture and properties observed over the years

By C. R. Kemp

J. R. Watkins Company



SILICATE of soda was first used in soap during the American Civil War, when rosin became very scarce and supplies were cut off altogether from Northern soap makers. History does not give us intimate details of the procedure for use, types of soaps, or results from the initial use. Sufficient to say is that in the beginning silicate of soda was comparatively cheap and that it could be incorporated in soap. Soon it became apparent that a silicated soap could be made to hold more water than the same soap without silicate. As might be expected, there were soapers who regarded silicate of soda simply as a "stretcher," or in modern parlance, a filler. Whether it did or did not add anything in the way of detergent value was of minor importance. It was used then primarily because it added bulk and weight, and reduced the cost of the finished soap.

Even today, there is a cloudiness in the minds of some soapers, judging from the way the terms are used, between "filler" and "builder." There are those who still take the attitude that any added material to a soap is a "filler," irrespective of evidence that this is not the correct designation for all additives. Possibly it is best to digress for a moment to define specifically just what is meant by the two terms. It would appear that the definitions of the American Society for Testing Materials are best accepted to designate the exact difference in meaning. They are as follows:

Builder — Any material added to soap to improve its effectiveness under the conditions of use.

Filler—A material added to a soap or other detergent which does not improve its effectiveness under the conditions of use.

It is interesting to note that following 1865, when rosin again became available at reasonable prices, silicated soaps continued to be popular. It had become evident that silicate had value, and there were those who regarded such soaps as superior cleansers, thus establishing the fact that the final evaluation of a soap is the service which it renders. Therefore it became known that silicate of soda in soap was not merely an inert filler. Being cheaper than soap, mixtures of soap and silicate did and do sell for less. However it is not the purpose here to present the results of experiments and experience to establish silicate of soda as a detergent, especially in soaps. For those interested, these subjects are covered elsewhere in detail.[1]

[1] "The How and Why of Silicate of Soda" by James G. Vail. The value of silicate of soda as a detergent by John D. Carter, and the same subject by William Stericker. "Soluble Silicate Cleansers" by James G. Vail.

Before discussing the practical problems of silicate in soaps, it would be better to consider first, what are silicates of soda. The following paragraph taken from the literature of a manufacturer of silicates, presents an excellent description.

"Perhaps some explanation of the difference between the various grades of silicate of soda may be helpful. Silicates of soda are made by melting together soda ash (sodium carbonate) and silica in furnaces that are heated over 2000° Fahrenheit. The resulting products are combinations of sodium oxide (Na^2O) and silica (SiO^2). As they come from the furnace they resemble glass, but can be made to dissolve in water. Since the commercial silicates are not definite chemical compounds, glasses containing different relative amounts of sodium oxide and silica may be produced. Special treatment is necessary to dissolve in water the silicates that are used in soap making. The solutions are usually made as concentrated as possible in order to save freight. When the solid content is too high, the more alkaline silicates become very viscous and the more silicious ones become stiff jellies. The grades which are most likely to be of interest to the soapmaker are given in the following table.

	"N"	"K"	"U"	"C"
Sodium oxide (Na_2O)	8.9%	11.0%	13.8%	18.0%
Silica (SiO_2)	28.7%	31.2%	33.7%	36.0%
Water	62.1%	57.4%	52.0%	45.5%
Ratio $Na_2O:SiO_2$	1:3.22	1:2.84	1:2.44	1:2.00
Baume	41°	47°	52°	59°

Soap makers who encounter difficulties with the mottling of the crutched soap, use more alkaline silicates such as "K," "U" and "C" grades. Here again, if the concentration and alkalinity of the mixture becomes too high, there may be mottling."

IN CONSIDERING methods of manufacture of silicated soaps, it should be understood that comments here are primarily intended to be of interest to smaller manufacturers rather than to larger firms who have had wider experience and are familiar with the silicating problems. First, the manufacturer must make his choice of the type of soap he desires to produce. This choice is influenced mostly by the equipment available, capital available, market conditions of fats and glycerine. Quite often he decides to manufacture by the cold or semi-boiled method, as these methods do not require the equipment necessary for full-boiled soaps. Unfortunately they have disadvantages. For instance there is no glycerine recovery as the glycerine remains in the soap, and a most careful selection of fats is necessary because there are no cleansing lyes drawn off as in the full-boiled methods. Then, it must be remmebered that, in using the cold or semi-boiled methods, strict control must be exercised in making each lot, whereas in the full-boiled method this control effort once applied takes care of many times as much soap. However, careful selection of stock and strict control will produce acceptable soaps. There is one particular advantage of the cold and semi-boiled methods that the full-boiled method cannot offer and that is, they can produce base soaps of lower moisture content capable of taking up more silicate of soda. This advantage is attained, of course, by the use of high-density lyes. The base soaps produced by the full-boiled method average about 31 or 32 per cent moisture, but by the cold or semi-boiled methods the moisture can be readily controlled at, for instance, 26 or 27 per cent. This advantage creates a favorable situation for the manufacturer of flakes, as it eliminates some of the drying cost. It also assists in preventing warping and shrinkage in bar soaps. 2 By these methods, particularly the semi-boiled method, a base soap of about 15 per cent moisture, containing 0.1 per cent silicate of soda and suitable for milling, can be made. The small percentage of silicate in this instance serves as an excellent preservative, although it has been found that 0.1 per cent of sodium hyposulfite in addition to the silicate is to be preferred in the case of toilet soaps. However in the production of other types of soap containing larger percentages of silicate such as 10, 20 and 30 per cent, the silicate alone is sufficient as a preservative.

A few typical formulae at this point will probably do to serve as examples. Here is a typical formula for a yellow laundry soap to be made in bar form.

	Lbs.
Tallow	1,000
Rosin W. G.	600
Silicate of Soda 40° Be.	250
Soda Lye—36° Be.	850

Melt the rosin with all or a part of the tallow. When all of the tallow and rosin are melted then heat or cool the mixture to 150° F. Run the crutcher and add the soda lye. Keep the temperature between 130 to 150° F. After about 30 minutes or so the mass will grain or separate, but keep the crutcher running. Soon the mass will smooth out. At this point run in the silicate of soda which is about 80 to 90° F. When the mass is perfectly smooth, drop into frames. After about 15 to 30 minutes, hand crutch the frame to assist in removing trapped air, and also to permit escape of heat. When the soap has been in the frame for a sufficient time, usually four or five days, it can be cut. Note that the ratio of silicate of soda to the moist soap is about 10 to 1 or 10 per cent. This is typical of this kind of a *rosin soap.*

The following is a formula for a white soap containing a larger percentage of silicate. This soap can be made into bars or flake by a slight variation in the procedure.

	Lbs.
White Tallow	523
Coconut Oil	174
Silicate of Soda 40° Be.	420
Caustic Soda 50° Be.	237
Water	100

The procedure here is to heat the tallow and coconut oil to about 125° F. About one-third of the mixture of tallow and coconut oil are run into the crutcher and mixed with about one-third of the caustic soda for about five minutes. Then the second-third of the fats and caustic is added and mixed for five minutes, and finally the last portions of fat and caustic are added and mixed until the mass

becomes thick. Now run in the silicate of soda and mix well. Stop the crutcher and allow to stand for about 1½ hours. The 100 lbs. of water not yet added can be used if swelling occurs, by mixing slowly and adding the water slowly. If excessive swelling does not occur, then the 100 lbs. of water is added at the end of the 1½ hours to thin out the mass and cool it down. If it is desired to make bar soap, the mixture is crutched and cooled. Drop into the frames at about 145° F.

It it is desired to manufacture flakes from the above formula, the principal difference in procedure will be at that point where the mixture has been allowed to stand for 1½ hours. At this point it wil be found that the temperature is about 185° F. Instead of adding the 100 lbs. of water and cooling, a sufficient amount of hot water, usually about 100 lbs., sufficient to flow properly to the rolls is added, the temperature remaining about 185° F.

One well-known manufacturer of laundry soaps, uses a full-boiled base soap made from 70 per cent tallow and 30 per cent coconut oil. In the crutcher it is mixed as follows:

	Lbs.
Full-boiled Base Soap	700
Silicate of Soda	400

An example of the use of silicate of soda in cold-made soap is as follows:

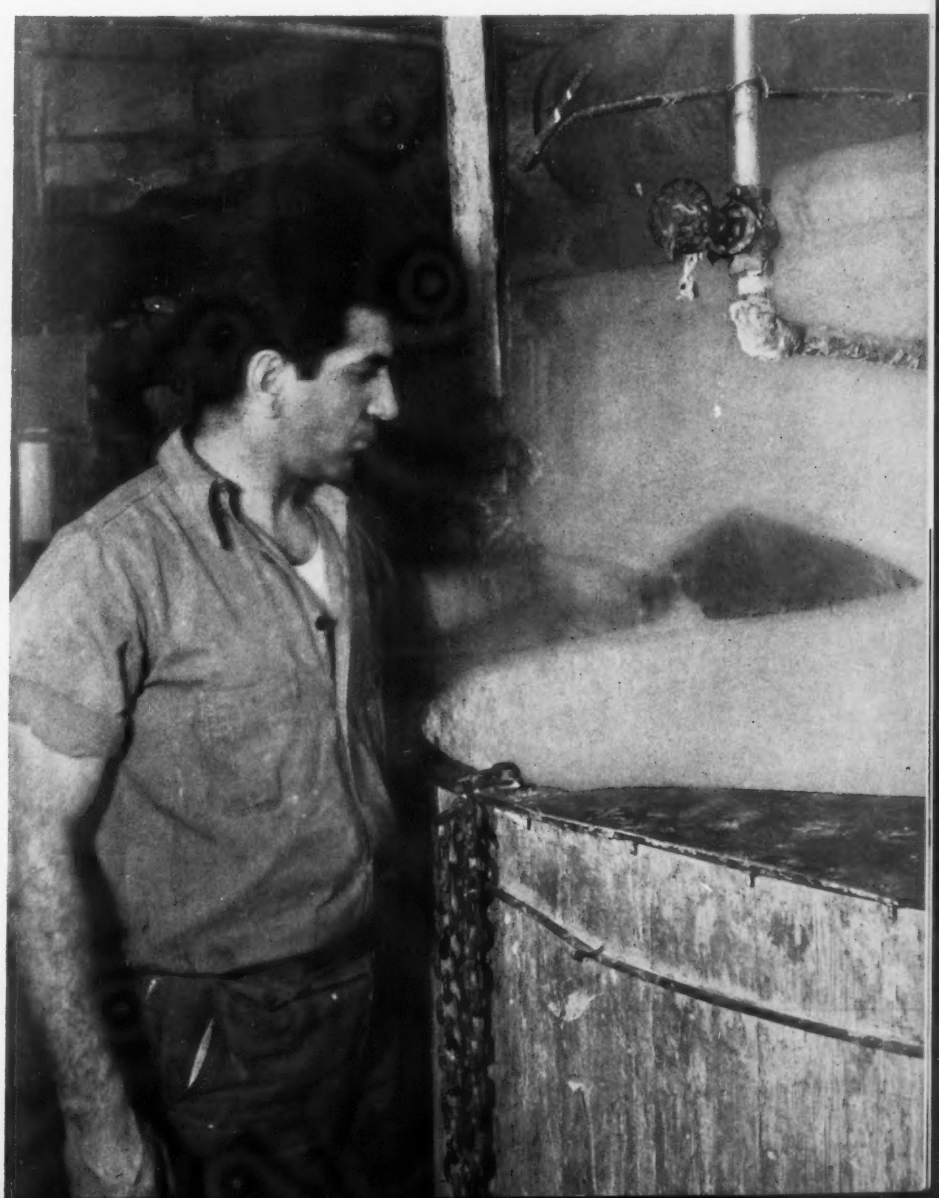
	Lbs.
Tallow	225
Coconut Oil	75
Caustic Soda 36° Be	220
Silicate of Soda 40° Be	375

The procedure here is to run the tallow and coconut oil into the crutcher. Heat or cool, as the case may be, the fats to about 135° F. With the crutcher running, add the entire quantity of the caustic soda. Next the silicate of soda is run in, and crutching is continued until the whole mass becomes creamy and finally heavy enough to make a permanent mark on the surface. At this point the mixture is run into frames. Saponification continues in the frames with the generation of considerable heat. The frame should not be moved for several days until the soap has cooled. The apparent excess of caustic soda over the calculated amount necessary for saponification is "for the silicate".

When calculating formulas for cold or semi-boiled soaps, it should be remembered that silicate of soda will react with caustic soda and combine with it up to a certain point. A rough method of calculating excess of caustic soda over the amount necessary for saponification, is to add 2 lbs. of solid caustic soda for each 100 lbs. of silicate of soda in a semi-boiled soap and about 5½ lbs. for each 100 lbs. of silicate in a cold made soap. These figures are reasonably accurate, but may require some slight variation in specific cases. In the manufacture of full-boiled soaps, which are intended to be worked up with silicate, an excess of caustic soda is left in the base soap in order to allow for the reaction of the silicate when mixed in. This excess is obtained by making an "open" finish on the boiled soap, just after a strong lye grain, or if the finish comes after a salt grain, by adding caustic soda to the finish.

If it happens that a hot mixture of soap and silicate stiffens in the crutcher, it is an indication that there is not a sufficient excess of caustic soda present. When this occasion arises, the mixture can be "saved" by the quick addition of strong caustic soda solution, about 40° Be. in small quantities until the mass has thinned out to the proper state.

Some manufacturers prefer to prepare their silicate of soda in ad-



vance by digesting a quantity of caustic soda with it. This procedure has its advantages for those who wish to use it. First, it will greatly assist in preventing "skin" on the surface of the liquid in the storage tanks and render it more fluid. Most soap makers prefer to buy a brand of silicate of soda rather low in alkalinity and add caustic soda, since it usually represents a saving to them. The amount of caustic soda to be added will depend upon the judgment of the soap maker, as it varies according to the character of the soap stock to be used. It is not advisable to use more than about 5 lbs. of solid caustic soda per 100 lbs. of the regular 40° Be. silicate of soda. The process of adding caustic soda to silicate, sometimes improperly referred to by plant men as "saponifying", is, briefly, to add the calculated quantity of caustic solution of about 36° Be. to the silicate, mix thoroughly and raise the temperature to about 165 to 175° F. Allow to stand for at least 24 hours before using, in order that the silicate and the caustic may come to equilibrium. If the mixture is used too quickly, an irritating soap will result.

LET us refer again to the subject of the selection of fats and their relation to base soaps, and the ability of these base soaps to mix with silicate of soda. The melting point of a base soap has considerable influence upon the percentage of silicate of soda that can be used with it. For example it is known that a base soap made from a mixture of 75 per cent tallow and 25 per cent coconut oil will allow the addition of a greater percentage of silicate of soda than a mixture of 75 per cent grease and 25 per cent coconut oil. Soaps containing rosin will not permit the addition of as much silicate as could be used in a soap without rosin. Briefly the hard fats will produce soaps capable of holding up more silicate than the soft fats.

There is one exception to the above general statement, namely, coconut oil. In making this statement, it is realized that it is not in agreement with certain current literature on this subject. To substantiate the exception of coconut oil, let us first refer to the behavior of coconut oil. Webb (*Modern Soap and Glycerine Manufacture*) has presented the I.N.S. theory in such convincing manner that it must be regarded highly, even if it is not always possible to follow it blindly. In applying the I.N.S. factor to the production of household soaps, Webb states in part; "The oils of extreme high and low I.N.S. factors are both obviously unsuitable for the production of a soap of this quality. Nut oils would produce too hard a soap. The medium factor oils, namely tallow and palm oil suggest themselves, as the most suitable materials, and in fact these oils do form the basis of household soaps . . . Since these oils produce soaps deficient in lathering power they must be blended with a certain quantity of quickly-soluble and quick-lathering stock of low factor. These latter oils whilst tending to improve the lathering property, have the effect of softening the soap . . . To counteract this softening action, palm kernel or coconut oil is added in sufficient amount to restore hardness and at the same time improve still further the lathering properties."

We have plenty of evidence that coconut oil produces a hard soap, and should always be favorably considered when preparing a base soap to mix with silicate of soda. In addition to its property of producing a hard soap, coconut oil possesses the property of making base soaps which pass quickly from the fluid state to the solid. This property is particularly favorable when mixing in silicate with base soaps, since it is desirable to crutch the silicate and soap to a point where the soap begins to stiffen, and as coconut oil soaps cool quickly and hold large percentages of silicate, they are ideal. The operation of crutching may be critical with large percentages of coconut oil, but not at all impossible.

Generally speaking coconut oil should be at least 25 per cent of the fat used in making a base soap for silicated soaps. There is today one large-selling household bar soap using coconut oil up to about 80 per cent of the fat content of the base soap. It is a well-made bar of good quality and contains slightly less than 50 per cent anhydrous soap. This will give an idea of the amount of silicate of soda that has been added to this particular type base soap.

HAVING considered some of the influences of the base soaps on the relative amount of silicate of soda that can be mixed in, consider now how much silicate should be mixed in. A quick, but not specific answer is, as much as can be mixed in without spoiling the appearance of the finished product. Provided that all other things are equal, if the ability of a base soap to mix well and hold silicate of soda has been exceeded, then the appearance will suffer. If too much silicate has been added to a base from which flakes are to be made, the flakes will appear heavy and chalky white, and the same condition in soap intended for bars will produce soft and sticky soap, or of perhaps rather nice appearance when cut but quickly loosing its smooth appearance and becoming rough.

Using appearance as a standard to indicate when a sufficient amount of silicate has been exceeded, might well be accepted as there are no definite standards based on a full knowledge of the various considerations necessary to determine when further addition does not improve detergent effectiveness under the conditions of use. It is true that various specifications limit the percentage of silicate of soda by placing a limit on the alcohol insoluble material permitted. This does not sharply define the percentage of silicate because, as has been previously explained, the silicate of soda entering a soap may easily vary in ratio, of Na_2O to SiO_2 say from 1:30 to 1:22.

It should be mentioned at this point that precise results of analysis of soaps for silicates cannot be made unless it is definitely known the exact

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SOAP PHASES . . .

Recent developments in the application of the phase rule to soaps

By Robert D. Vold

Stanford University

THE purpose of this paper is to give a brief description of the soap phases now known or suspected to exist, and to show, in so far as possible, what is the effect of their presence on the phase rule diagrams for soap and water. Although this discussion is confined primarily to single pure soaps or very simple mixtures, the resemblance between all soaps, at least in the absence of curd fiber or waxy phases, is sufficiently close so that the behavior of commercial mixtures may be taken as qualitatively similar.

Eighteen years ago McBain, in the Fourth Colloid Report of the British Association for the Advancement of Science, presented an interpretation of the manufacture of soap by the boiling process based on the phase rule diagrams which he and his collaborators had derived. Many of the terms common at that time to soap boiling practice in England were given their phase rule significance. We became familiar with *nigre* (the ordinary soap solution containing 5 per cent to 35 per cent soap), *lye* (a solution of caustic or any electrolyte, containing very little soap), *neat soap* (the liquid crystalline soap phase found in the kettle as settled soap), the two crystalline phases, *lamellar crystals* (infrequent with sodium soaps) and *curd fibers* or *curd fiber* phase, and with the term *curd* used to describe any heterogeneous mixture containing curd fiber phase as one of the constituents, such as an ordinary bar of soap at room temperature and possibly the fully grained soap of the soap kettle. A little later the new phase, *middle soap*, was discovered, a more dilute crystalline soap phase occurring occasionally in the kettle as undesirable "gum soap."

However, despite the scientific order introduced by this interpretation into a hitherto entirely empirical art, certain anomalies still remained. Thus, values reported from different laboratories for the melting point of a single pure, dry soap, sodium palmitate, varied by as much as 50° C. Further study showed the difficulty was due to the existence of a series of forms of sodium palmitate whose independent existence as distinct phases had not previously been recognized. The resultant complexity introduced thereby into the phase rule diagrams of soap and water or of soap, salt and water, has not yet been entirely resolved.

Utility of the Phase Rule Approach

Knowledge of the phase rule diagram is the best guide to understanding of the processes taking place in the soap kettle, and of the means available for producing any desired modification. Following formation of soap by saponification, the manufacturing process can be regarded as a series of phase changes brought about by alternate addition of electrolytes, steam, etc. designed to effect complete saponification, permit maximum recovery of the liberated glycerine, remove color and impurities, and obtain the soap in a smooth plastic form ready for crutching, framing or further processing.

The phase rule diagram provides a convenient means for summarizing and representing all these data: (1) it shows the limits of concentration within which the mixture will exist in any given condition, such as homogeneous neat soap or a two-layer system of neat soap over nigre; (2) it makes possible an immediate answer to such questions as what will be the effect of adding more water or salt to a given charge or working at a higher concentration of soap; (3) it permits calculation of the relative amounts of neat soap and nigre which will be obtained at different electrolyte concentrations in the fitting process, etc.

A diagram of the temperature of the kettle for the three-component system "soap"-"salt"-water, where the soap may be made from any desired mixture of fats and the "salt" may be any mixture of caustic and electrolytes, is useful for predicting and controlling the behavior of the soap in the kettle. A diagram over the whole temperature range for the binary system "soap"-water is also desirable for representing the changes which occur in the settled soap on drying or cooling, showing the transition temperatures and the effect of transitions on the homogeneity of the system and on the composition of the phases.

However, the phase rule diagram is by no means the whole answer to the problems of the soap maker. For one thing, the mechanical and visual properties of a soap may vary enormously within a single homogeneous phase, an important

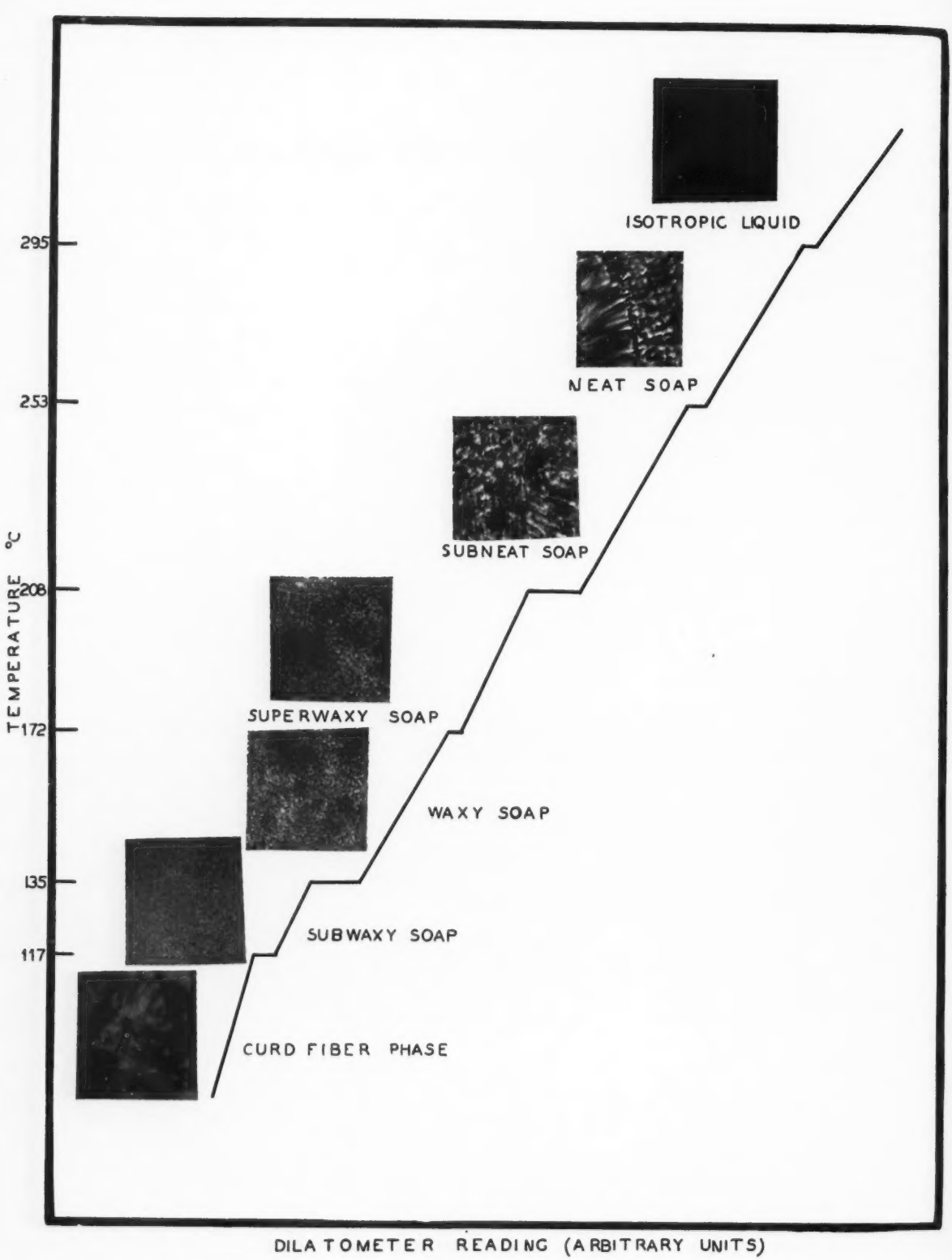

Fig. 1. Representation of the phases, dilatometric behavior and transition temperatures of anhydrous sodium palmitate. Photomicrographs (166 X; crossed Nicols) of the different phases are placed opposite corresponding portions of the dilatometer curve.

practical point which is not represented on an ordinary phase rule diagram. Such a diagram does not show the differences in hardness brought about by different electrolytes, nor the variations in texture with mechanical working, etc. For instance, systems of sodium stearate and water at room temperature, presumed to consist of mixtures of the same phases, have very different appearances depending on the phases present at higher temperatures from which they were formed by cooling.

It must also be remembered that *the usual phase rule diagram applies only to systems which are at equilibrium.* If cooling has been overly rapid or if the system is very viscous, the characteristics of a bulk system may be very different from the equilibrium behavior represented on the phase rule diagram. It is instructive in this connection to reflect that glass and certain steels owe their practical value to the non-appearance or non-separation respectively of the equilibrium phase at room temperature. Consequently, in the application of phase rule diagrams, it must be recognized that they are usually made to represent only the final state toward which the system tends; with any actual soap it is always important to investigate to what extent this equilibrium has been attained. Of course,when sufficient information is available,—which is not yet the case.—it will also be possible to represent on phase rule diagrams the behavior of the metastable systems which may occur in framed soaps.

Phases of Pure Single Soaps

Anhydrous single soaps can exist in at least seven different forms which occur successively as the temperature is raised. In the case of sodium palmitate the phases are *curd fiber phase* (to 117°C.), *subwaxy soap* (to 135°C.), *waxy soap* (to 172°C.), *superwaxy soap* (to 208°C.), *subneat soap* (to 253°C.), *neat soap* (to 295°C.), and *isotropic liquid* (about 295°C.). Curd fiber phase, which is truly crystalline as shown by X-ray studies, may exist in more than one stable modification and there may be a transition temperature at 62°C.

If four or five grams of sodium palmitate are sealed in a glass tube and heated, differences in gross appearance can be detected between some of these phases. Curd fiber phase is a hard, opaque, white solid, which, if previously melted, forms a cake impenetrable to a stirring rod. There is very little visible change at the transition to subwaxy soap, although, if the soap has been largely freed of air bubbles by previous melting, it is possible to notice a slight decrease in opacity and a certain swelling of the soap against the glass. Although very stiff, it is just possible to push a glass rod through a lump of subwaxy soap. There is no marked change in appearance between the three waxy phases, subwaxy, waxy and superwaxy soap, although there is the usual tendency for the soap to become softer as the temperature is raised. The next group of two phases, subneat and neat soap, are very much less viscous than the wazy phases, the neat soap, especially, flowing under its own weight. Both are translucent, rather than opaque, the subneat soap being rather chalkier than the neat soap.

Neat soap here is used to apply to the first phase which forms when the anhydrous isotropic liquid is cooled, and may have no relation to the aqueous neat soap of the kettle which we shall henceforth call by the name *soapboiler's neat soap.* Melting to ordinary isotropic liquid is easily detectable since the soap then flows fairly freely, forms a meniscus, permits air bubbles to rise readily to the surface and is dark when viewed between crossed polaroids.

Conclusive demonstration of the existence of these transitions has not been easy since all of the changes are seldom detected by one method of study. One of the most convincing proofs is the presence of discontinuous changes in volume at each of the transition temperatures, evidenced

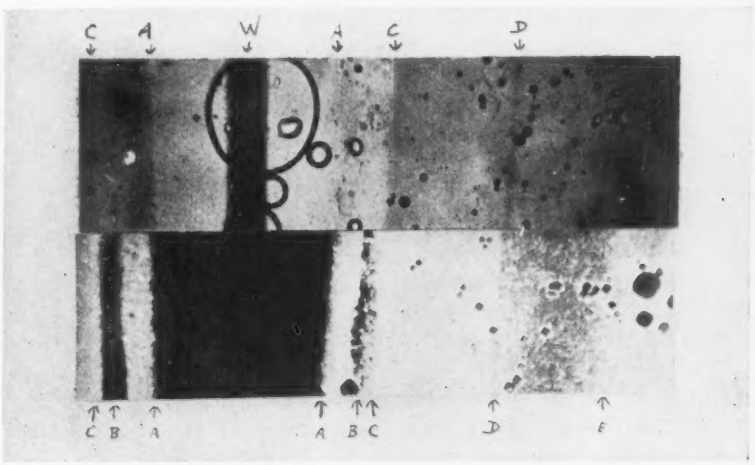

Fig. 2—Photomicrographs of anhydrous sodium stearate by the hot wire technique.

Five of the six phases of sodium stearate appear successively as the temperature falls from about 350°C. near the wire (W) to about 140° at the right hand edge of the photograph.

A. Boundary between isotropic liquid and neat soap.
C. Boundary between neat soap and subneat soap.
D. Boundary between subneat soap and superwaxy soap.
E. Boundary between superwaxy soap and waxy soap.

The upper photograph was taken with the Mikropolychromar, the lower, showing an adjacent portion of the same field of view, with crossed polaroids. Magnification is about 20 fold.

At B the neat soap has begun to become oriented simulating the appearance of isotropic liquid.

by horizontal steps in the volume-temperature curve obtained by heating the soap in a dilatometer. A schematic representation of this behavior is shown in fig. 1. In some instances, however, the volume changes are so small that they might be regarded as experimental errors were it not for the supplementary confirmation obtained by other methods.

Microscopic examination between crossed Nicols of sodium palmitate in a sealed capillary of 1 mm. thickness, placed in a small electric oven on the microscope stage, has shown differences between many of the phases indicated in Fig. 1. Under these conditions, curd fiber phase is so opaque it is practically dark. The formation of subwaxy soap is marked by a pronounced brightening of the field and the appearance of a fine stippled structure. It has not been possible definitely to distinguish waxy from subwaxy soap and superwaxy from waxy soap by this technique. Subneat soap differs enormously from superwaxy soap in that the structural units are much larger and there are brilliant polarization colors of many hues. Neat soap is characterized by the presence of focal conic structures, optical figures characteristic of the smeotic type of liquid crystal. Formation of isotropic liquid is very sharply defined by the complete darkness of the field of view which occurs at this point.

Another microscopic method of great value for the anhydrous soaps is examination between crossed Nicols or with the Mikropolychromar, the soap being spread out in a thin layer (ca. 0.2 mm.) between cover glasses, exposed to a thermal gradient resulting from an electrically heated wire stretched across one end of the sample. Under these conditions, a whole series of phases are obtained side by side, separated from one another by clearly visible interfaces as seen in Fig. 2. The transition temperature can be fairly closely determined by measurement of the distances from these boundaries to the hot wire by means of a traveling microscope. Since subwaxy soap scatters light markedly, waxy soap less, and superwaxy soap very little, when these phases are examined with the Mikropolychromar subwaxy soap shows up in the color of the annular illumination while superwaxy soap appears in the color of the central beam.

Measurement of the temperature difference between a small sample of sodium palmitate (ca. 1 g.) in a thin-walled glass cell and a sample of an inert material such as Nujol in a similar cell as the temperature of both is raised uniformly is another method of study which has been used successfully. The transition temperatures are determined by the marked increase in the temperature difference between the two cells brought about by the latent heat of transition of the soap. All of the transitions have been found by this method except that from waxy to superwaxy soap, which must have only a very small heat effect.

The sodium salts of lauric (C_{12}), myristic (C_{14}), stearic (C_{18}), arachidic (C_{20}), behenic (C_{22}) and oleic (C_{18}) acids, potassium stearate, and several other soaps, were also studied by these same methods. All underwent a large number of transitions before melting to isotropic liquid, thereby showing that in general the single soaps can exist in any one of seven (or eight) different equilibrium forms depending on the temperature. In general, the transition temperatures decrease with increasing chain length, except for the transition from subneat to neat soap

(*Turn to Page* 71)

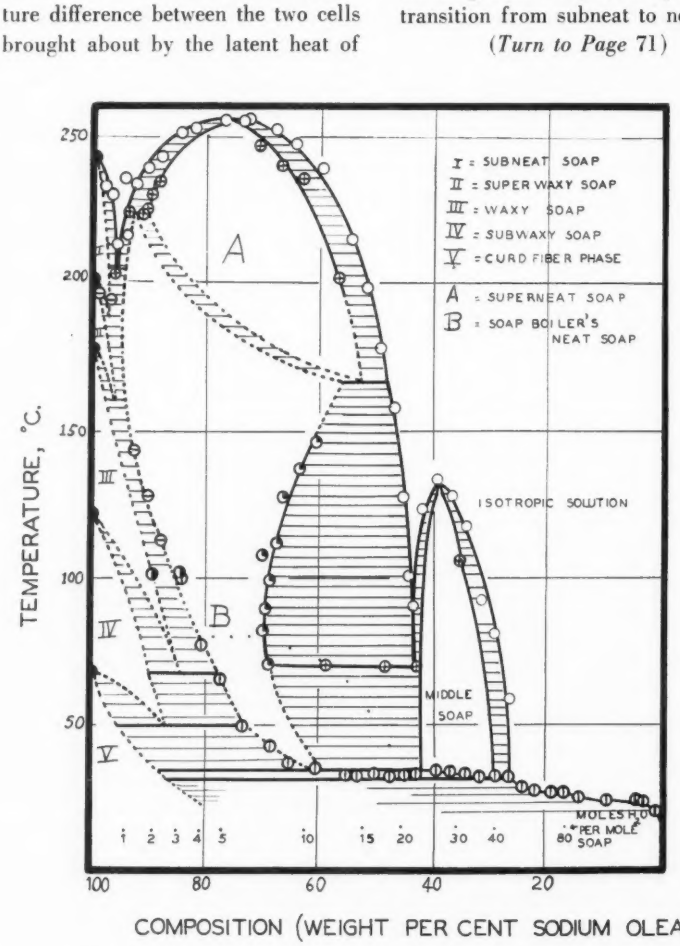

Fig. 3. Phase rule diagram of the system sodium oleate-water. O, T_i ; ⊕, T_c; ●, dilatometric results; ◑, vapor pressure results; ⊙, T_c ; ⊖, "T_c" obtained on cooling; ◔, data from phase separation; • , small black dots representing changes in visual appearance of doubtful phase significance.

War hits the OIL MARKETS

THE fact that Europe is fighting the greatest war in its history finally made itself felt as a factor in the market for soap making oils this past month. American soapers, who have been successfully ignoring the war as a market factor for eight months following its start, with ready access to ample supplies of soap oils at no appreciable increase in price, were shaken out of their calm this past month by a succession of very serious developments. They currently see offerings of olive oil withdrawn, palm oil futures available in very meagre quantity, and the threatening prospect of further developments in Europe or the Near East perhaps cutting them off indefinitely from essential supplies.

The first situation to come to a head was the olive oil market. One by one the Mediterranean producers have been curtailing exports and at the moment a practical embargo exists on shipments from Spain, Italy and France. The purpose of these countries, of course, is to husband stocks at home, since they can no longer feel confident of shipments of food fats reaching them over long distances by sea. Of the Mediterranean producers only Greece is still shipping, and it seems only a question of time before shipments from this source will cease, either because of exhaustion, by government decree, or the possible extension of the war to the Mediterranean. The threatening motions that Italy and England have been making at each other seem to hold in definite prospect the possibility of complete closing of the Mediterranean exit at Gibraltar.

Some small relief may be provided by shipments of olive oil from Portugal. It is reported that the Portuguese sardine catch has been a failure this year and that some portion of the Portuguese olive oil normally used by the Portuguese canners is available for shipment to America. Relief from this direction, however, cannot be counted upon to assume any substantial proportions.

Local suppliers of olive oil and olive oil foots had practically withdrawn from the market last month, and were supplying only working stocks to their regular buyers. Denatured oil was being quoted nominally at $1.25 to $1.30 per gallon,—approximately 30c above figures mentioned a month before. Foots were also nominal at 8¼ to 8½c.

The immediate factor behind the disruption of the palm oil market last month was the invasion and subjection of Holland by Germany. Production of palm oil in Sumatra, from which island two-thirds of American imports come, has been Dutch controlled. For weeks following the invasion, sellers in the American market were in many cases unable even to get in communication with their principals abroad and so were in no position to know what stocks were available, or when and how it might be possible to ship them. Even now the situation is still confused and arrival of future deliveries is little more than a speculation.

Sellers of West African palm oil (of which the American market normally takes 30,000 to 50,000 tons annually as compared with 100,000 tons of Sumatran oil) were in somewhat better position. At least they were able to keep in close touch with producing areas and had the satisfaction of knowing that shipments were still coming forward in American ships. They reported however, that only some 3,000 tons of oil expected between now and the end of the year are not currently contracted for, indicating that users who have not already made arrangements for future deliveries may have difficulty in finding available supplies, particularly so if the situation in Sumatra does not improve rapidly.

It is this situation in Sumatra that offers the principal cause for concern. With Holland conquered by Germany, who is to take over control of the Dutch East Indies? If the Allies attempt to take the reins, there may be complications with Japan. If Japan should seize the Indies, will there be any assurance that shipments of Sumatran palm oil to United States will continue? Suppose Germany arranged with Japan to ship Sumatran palm oil in Japanese ships for entry at Vladivostok and transshipment across Asia to Germany. Would the British dare to interfere now that they are so seriously involved on the continent? And would United States allow Japan to seize or monopolize East Indian palm oil and such other even more essential raw materials as rubber and tin? On the answers to these questions hangs the story as to what the future course of the palm oil market may be. As yet these answers are not clear and the whole palm oil market thus remains a gamble.

There is one brighter side to the picture, however, as far as soap makers are concerned. In the past Holland and Belgium, as well as Norway, Sweden and Denmark, have been important markets for East Indian palm and coconut oils. The current crops are still existent in the producing areas, and if they cannot go to their former European users on account of the British blockade, they may have to come to United States,—perhaps in such quantity as to seriously depress the local market. Thus the whole situation will probably resolve itself in the final analysis down to a question of how strong the British sea arm continues to be.

The picture on coconut oil is cloudy, of course, because any outbreak in the Pacific would involve the danger of cutting American soapers off from their Philippine source of supplies. Unless this should occur, though, there seem to be few other

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New Products and

"Tally," new medicated soap of Maximax, Inc., Chicago, is being marketed with a trial cake attached. Purchasers have the option of trying the small cake first and returning the large one for credit if they choose.

"Veeco," a new white shoe cleaner of American Products Co., Cincinnati, is packed in a tube instead of the customary bottle. It is marketed on a colorful lithographed display card which also carries a sponge applicator.

Curran Corp., Malden, Mass., makers of the "Gunk" line of industrial cleaning preparations, are currently introducing a new "Gunk" concentrate. In use it is diluted with nine parts of light fuel oil distillate.

Packages

Shulton, Inc., New York, are testing out a new cdor "Friendship Garden" for possible addition to their "Early American" line. Public reaction to the odor will first be determined in a toilet water.

Great Western Laboratories, Minneapolis, have just adopted a new container for their "Jiffy Jr." hand soap. The "kidney bean" opening in the sifter cover is said to increase sifting efficiency. Package by Cin-Made.

Yardley & Co., Ltd., New York, have recently introduced a new combination package which teams up the well-known "Yardley" shaving bowl with a trial size of "Crystallized Brilliantine" in an attempt to popularize the latter product.

News....

Forms New Company

Frederick W. Yardley has just leased the fourth floor of a building at 42 West 15th Street, New York, which will be used as quarters for his newly incorporated firm, Prack Laboratories. The company will make a soap product formerly sold from door-to-door under the name "Practikreme." Not previously made on a commercial scale, the product, according to Mr. Yardley, is a combination of vegetable oils, contains a small percentage of soda soap and is designed for use as a protective coating on the hands before they get dirty. The company will go into active operation about the first of June. Mr. Yardley, incidentally, is the great-grandson of the founder of Yardley & Co., Ltd., New York.

Introduce New Medicated Soap

Maximax, Inc., newly organized Chicago soap firm, has just introduced a new medicated soap bearing the brand name "Tally," with test campaigns in Chicago, Detroit and Cincinnati. A trial size bar of "Tally" is given with each regular size cake at 25 cents and purchasers are told that if not satisfied after using the small bar their money will be refunded. A special point is made of the soap's ability to remove odors. Distribution of the new soap for toilet use will be made through drug and department stores. Counter display cases have been provided for store use and merchants stocking the soap are given three free cakes with each order. "Tally" will also be offered in the industrial market and a special prescription soap, "Sapo Tally," has been prepared for doctors to be dispensed on written prescriptions. The soap is manufactured for Maximax by Armour Soap Works, Chicago. Offices of the new company are at 159 North Michigan Ave., Chicago. E. M. Johnston is president and Glen Price, secretary-treasurer.

P&G Executive Changes

At the May directors' meeting of Procter & Gamble Co., Ralph Rogan, former secretary, was elected

Ralph Rogan

vice-president in charge of advertising and promotion. H. Truxton Emerson, assistant secretary, was made secretary, assuming Mr. Rogan's former duties. L. H. Wiggers, with the company over 25 years, was made assistant secretary and will also continue as manager of the insurance department.

U. S. Soap Sales Gain

Sales of soaps during the first quarter of 1940 were 14.9 per cent above the average quarterly sales for the five years 1935 to 1939 inclusive, according to figures released by the Association of American Soap and Glycerine Producers in its soap census tabulations. Soap sales for the first quarter of 1940 amounted to 682,372,003 lbs., valued at $68,481,634, as against 606,885,229 lbs., valued at $58,396,922 for the last quarter of 1939, and 695,935,837 lbs., valued at $67,788,779 in the first quarter of 1939.

Harry W. Falck Dead

Harry W. Falck, president of F. L. Falck & Co., Pittsburgh oil manufacturers, died recently at the age of 41. Mr. Falck had been president of the company for eighteen years. He started in the soap and oil business when he was only 13 years old, working for his father, the late F. L. Falck, and was continuously connected with the company until his death. In addition to being head of F. L. Falck & Co., Harry W. Falck was also treasurer of Pittsburgh Corrugated Paper Box Co. The business will continue to be conducted by his two brothers, Ewalt P. Falck and O. H. Samuel Falck.

Miriam Gibson Joins Shulton

Miss Miriam Gibson, formerly connected with Monogram Pictures Corp., New York, is now publicity director of Shulton, Inc., New York toiletries firm. Miss Gibson replaced Miss Harriet Hawkins who resigned recently and was married on May 31.

Feature Frying Pan Premium

Swift & Co., Chicago, report heavy sales of "Sunbrite Cleanser" as a result of their premium offer of a copper frying pan with three labels and fifty cents. Counter cards and window streamers were supplied to dealers to publicize the offer.

Rhodes Joins Quaker

George H. Rhodes has just joined the research staff of Quaker Chemical Products Corp., Conshohocken, Penn. Mr. Rhodes, who has been employed as research chemist and colorist at many American mills, will confine his work to the development of resin and organic finishes as applied to textile finishes.

Test New Type "Ivory"

A new type "Ivory" soap has recently been introduced by Procter & Gamble Co. with test campaigns in several marketing areas. Baltimore is one of the eastern cities in which the new "Ivory" is being offered. Improvements in lathering qualities, keeping qualities and appearance are claimed. After the public reaction is determined in the test areas, several months will probably elapse before any decision is made as to general adoption of the new product.

Laundry Soap Wanted

A concern in Jeddah, Saudi Arabia, is interested in purchasing laundry soaps of American manufacture. Those interested in obtaining complete details may do so by writing to United States Bureau of Foreign and Domestic Commerce, Washington, D. C., and referring to inquiry No. 7121.

Employment Index Above 1939

Although the employment index of the soap industry (compiled by the U. S. Dept. of Labor) for March, 1940 was lower than that for February, 1940, it still showed a comfortable margin over the figure for March, 1939. The March, 1940 reading was 82.5 as compared to 84.4 for February, 1940 and 80.6 for March, 1939. The payroll index, similarly based on the three year average of 1923-25 as 100, was 99.2 for March, 1940, 100.3 for February, 1940 and 96.2 for March, 1939.

Lever Transfers MacLeod

Lever Bros. Co. has announced the transfer of L. H. MacLeod from Pittsburgh to Chicago where he will be divisional manager for the midwestern territory. G. T. Davis, formerly in charge of the Minneapolis office, has succeeded to Mr. MacLeod's position in the Pittsburgh district.

Carpenter Heads du Pont

Walter S. Carpenter, Jr., has just been elected president of E. I. du Pont de Nemours & Co., Wilmington, succeeding Lammot du Pont who becomes chairman of the board. Pierre S. du Pont, former chairman of the board, has retired. Mr. Carpenter, the new du Pont president, was formerly vice-president of the company.

Packers Appoints Agents

Packers Tar Soap, Inc., New York, has appointed Ivey & Ellington, Inc., as advertising agents.

Chicago Assn. Spring Party

Several hundred members and guests of the Chicago Drug & Chemical Association participated in the annual spring party held at the Palmer House May 25. John A. Scott, of Merck & Co., vice-president of the association, was chairman of the committee on arrangements.

Lever Chicago Premium Drive

Lever Bros. Co., Cambridge, Mass., distributed 9-ounce sample boxes of "Rinso" washing powder to Chicago housewives last month, together with coupons entitling users to other Lever Bros. products free. One offered two cakes of "Lifebuoy" soap with the purchase of one large package of "Rinso." Another offered two cakes of "Lux" toilet soap with one large size box of the new "Quick Lux" soap powder.

Nassour Names Weinberg

Nassour Bros., Inc., Los Angeles, makers of shampoos and soaps, have appointed Milton Weinberg Advertising Co., Los Angeles, to direct their advertising.

Soaps at Safety Conference

Soap as an essential factor in reducing industry's estimated annual expense of $4,000,000 due to industrial dermatitis was included among discussions on the program of the Midwest Safety Conference in Chicago April 30 to May 2. The need for providing satisfactory protection for employees was emphasized and stress placed on selection of industrial soaps of proven performance. Capitalizing on this build-up, five manufacturers of soaps and sanitary chemicals presented displays of their products in the exhibition of safety appliances arranged for the conference.

West Disinfecting Co., Long Island City, N. Y., featured "Lan-O-Kleen" double-action hand cleaner and conditioner, along with pest exterminating products, deodorants, foot bath trays, paper towels, vending machines for sanitary napkins and other items. A motion picture showing how West Company's products promote sanitation was kept constantly in action. R. O. Jackson, midwestern district manager, was in charge and James Hendry of the eastern office, assisted in special promotion of "Lan-O-Kleen."

G. H. Packwood Mfg. Co., St. Louis, displayed their line of "Pax" heavy duty and light duty granulated soap, along with washroom soap dispensers and also invited attention to their "Pax" cleaning cream for absorbing hectograph ink stains on office workers' hands. H. J. Hoffman, Chicago representative, was in charge.

Great Stuff Products Co., West New York, N. J., distributed samples of their "John D. Jr." powdered hand soap and other cleaning compounds, including "Derma-Cote," described as a protective cream for use on hands before they are soiled. Among the large staff of salesman at the booth were: John D. Robnett, Chicago; E. J. Sella, New York; J. H. Rain, Detroit, and C. W. Lee, Minneapolis.

From Saginaw, Mich., Sugar Beet Products Co. sent a display of their "Formula SBS-II." Produced in their chemical by-products division, this was described as a soap which eliminates hazards of harmful abrasive soaps and especially suitable for controlling skin infections. W. C. Potter and G. S. Gove from Saginaw, were on duty.

Dermatitis control was also the central theme of the display of Lightfoot, Schultz Co., New York. "La Grace" powdered toilet soaps formulated to meet various conditions were displayed and samples handed out. W. E. Pemberton, Chicago district manager, directed the promotional work.

Soapers on I.R.I. Committee

F. W. Blair, chemical director, Procter & Gamble Co., Cincinnati, and Robert B. Colgate, vice-president, Colgate-Palmolive-Peet Co., Jersey City, N. J., were among those elected to the executive committee of the Industrial Research Institute at the recent annual meeting in Cincinnati. Mr. Blair presided at the speaking session. Dr. R. S. Uhrbrock, member of the industrial relations department, Procter & Gamble Co., discussed the objective tests in mathematics, physics, chemistry and vocabulary that have been used since 1935 as supplements to interviews in selection of college graduates by the manufacturing department of the company. Visiting various plants, the sixty delegates spent some time in the Ivorydale research laboratory of Procter & Gamble.

T.G.A. Attacks Soap Ads

Soap advertising of the type that warns against "cosmetic skin" was cited as unfair and opposed to the interests of the cosmetic industry in a resolution adopted by the Toilet Goods Association at their fifth annual meeting at the Hotel Biltmore, New York, May 14-16. The resolution proposed that representations be made direct to the soap company concerned to stop use of such advertising appeals, and that trade groups in the soap field also be appealed to in a spirit of conciliation. If such negotiations do not result in a satisfactory conclusion, association officials were empowered to take further steps.

Another subject discussed quite sharply on the meeting floor concerned promotional programs based on deals featuring special price reductions or free merchandise. Such offers were characterized as distinctly bad merchandising. It was pointed out that once a customer obtains a price concession on an article, he is reluctant thereafter to resume paying the full price on subsequent purchases.

Herman L. Brooks, head of Coty, Inc., was re-elected president of the Toilet Goods Association for another year. Other officers were also re-elected as follows: first vice-president, Cecil Smith, of Yardley & Co.; second vice-president, P. E. Hulburt, of J. B. Williams Co.; third vice-president, H. P. Willats, of Colonial Dames, Inc.; treasurer, Paul F. Vallee, of Roger & Gallet; secretary, J. I. Poses, of A. A. Van Tine Products Corp.; and executive secretary, Charles S. Welch.

Herman L. Brooks

The executive board was enlarged by the election of four new members: Joseph Kehoe, of Dorothy Gray, Ltd.; H. P. Goulden, of Jacqueline Cochran; J. N. Buck, of Plough, Inc.; and Joseph Danilek, of Elizabeth Arden.

Other members were re-elected as follows: C. M. Baker, of Pond Co.; H. Clyde Balsley, of Merle Norman; A. H. Bergmann, of Oxyzn Co.; Paul H. Douglas, of Bourjois, Inc.; C. W. Godefroy, of Godefroy Manufacturing Co.; A. E. Johnson, of Colgate-Palmolive-Peet Co.; D. H. McConnell, Jr., of Allied Products, Inc.; C. A. Pennock, of Richard Hudnut; George A. Wrisley, of Allen B. Wrisley Co.; Leonard E. Lisner, of Rimmel, Inc.; and H. Gregory Thomas, of Chanel, Inc.

Lever Shifts Davis

G. T. Davis, formerly in charge of the Minneapolis office of Lever Brothers Co., has been appointed divisional manager of the company in the Pittsburgh district. He succeeds L. H. McLeod, who has been transferred to Chicago as divisional manager of that territory.

Lever Canadian Head Dies

Harold Alban Wilkins, president of Lever Brothers, Ltd., and associated companies in Canada, died suddenly from a heart attack, May 11th, at Hollywood, Calif. Mr. Wilkins, who was in poor health, had left Toronto only a few weeks before for California, hoping to recuperate. He was in his 38th year and had headed the Lever Canadian interests since 1937. A native of England, he was the son of the late Rev. Harold Wilkins and Mrs. Wilkins. Mr. Wilkins joined the parent company in England in 1928 and was later transferred to Australia, where he held an executive position. He had travelled extensively throughout the United States, New Zealand, Dutch East Indies, Malaya, India and Europe. He was a member of the Toronto Golf Club and the Board of Trade. Surviving are his widow, Evelyn Maud Wilkins; son John R., a student at Upper Canada College; his mother, Mrs. Harold Wilkins, Liverpool, England, and one brother in the Royal Air Force and three sisters, in England.

T. B. Robertson III Arrives

Mr. and Mrs. T. B. Robertson, Jr., are parents of an eight-pound boy, born May 7th at the Oak Park Hospital, Chicago. The child seems destined to have a career in the soap industry since his father is with the Robertson Products Co., Chicago soap and sanitary supply manufacturers, and his grandfather is president of the same company.

Oil Trades Sports Outing

The Oil Trades Association of New York will hold its 22nd annual sports outing at Pelham Country Club, Pelham Manor, N. Y., on Tuesday, June 11. The sports committee, headed by Albert J. Squier, has prepared a program including golf, baseball, tennis and swimming in the new outdoor swimming pool. The other members of the committee are: John F. Renick, W. M. Osborn, C. T. Weihman, J. H. Blakney, H. F. Wilhelm, G. A. Wharry, Joseph C. Smith and Frank W. Boyd.

So Modern It Outmodes All Other Liquid Soap Dispensers

Black Plastic Body
Opal Glass Globe
No Washers
No Packings
Cannot Leak, Drip or Clog
Lock Filler Cap

Unbreakable Spring

Prices

	List Price	Less Than Doz. Lots	Doz. Lots
No. 21 Opal Globe.....	$3.00	$1.75	$1.50
No. 21-MG Metal Globe.....	4.50	2.50	2.25

3 dozen— 5 % discount from Dozen Price
6 dozen— 7½% discount from Dozen Price
12 dozen— 10 % discount from Dozen Price
F.O.B. New York City or Los Angeles, California

Samples

So that you can see these dispensers yourself and test them, we will ship you one of each (one with opal glass globe, one with metal globe) billing you at the dozen price. Examine them—compare them point by point to anything you have ever seen. If you do not want the dispensers just return them to us any time within 30 days and we will issue you full credit.

BOBRICK MANUFACTURING CORPORATION

15 East 26th Street
New York City

111 So. Garey Street
Los Angeles, Calif.

Coventry Soap Owners Split

I. Stahl and M. E. Feldman, who organized the Coventry Soap Co. several months ago advise that they are no longer connected in this enterprise. Mr. Stahl will continue to operate the Buffalo plant, located in the old Larkin quarters, but has adopted the name Stahl Bros. Soap & Chemical Manufacturers. He will manufacture his own as well as private brand toilet soaps, laundry soaps, vegetable oil soaps, floating soaps, industrial soaps, etc. Mr. Feldman will continue to operate under the Coventry name, with offices at 1133 Broadway, New York. Arrangements are reported currently being made for a plant in the New York district.

Issue Detergent Pamphlet

Röhm & Haas Co., Philadelphia, chemical manufacturers, are currently distributing a 12-page pamphlet describing the characteristics and uses of their detergent, "Triton 720," a synthetic sulphonated ether salt. The properties of wetting, adsorption, emulsification and deflocculation are defined and discussed in the booklet.

New Clifton Product

Clifton Chemical Co., New York, have just put on the market their new "Rub-No" liquid wax packed in a green and brown lithographed gallon can. Fein's Tin Can Co., Brooklyn, makes the cans.

Egyptian Bar Co. Moves

Egyptian Bar Supply Co., janitor and sanitary supply firm, formerly at 1825 South 8th Street, St. Louis, Mo., has moved to 2721 Salena Street.

Germicidal Detergent

A germicidal detergent suitable for general use contains a major proportion of buffer salts such as soda ash, monosodium phosphate or sodium silicate, together with a relatively small proportion of a mixture of active sulfonated wetting agents including a product of the type of sodium lauryl sulfate. When dissolved in water to give a 0.5-3 per cent solution, this is germicidal and contains a small fraction of 1 per cent of the wetting agents with a sufficient amount of the alkaline salts to give a pH above 11.5. Milward Bayliss, John L. Wilson and Erling J. Ordal. U. S. Patent No. 2,183,037.

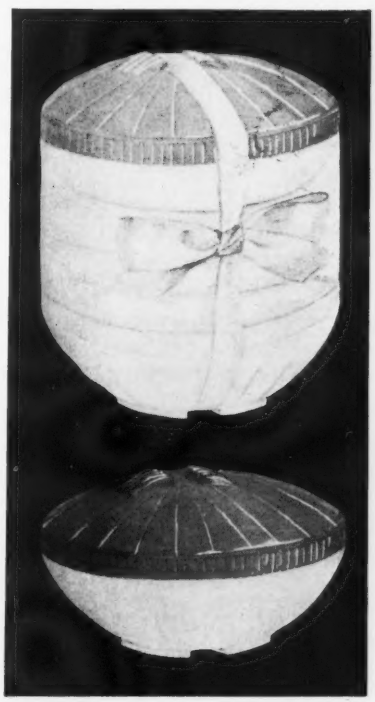
Renews Subway Advertising

Thomas A. Gill Soap Co., Brooklyn, has renewed its advertising in the New York Independent Subway and the B.M.T. Subway System featuring Johnson's Foot Soap.

Soap & Refrigerator Tie-Up

Procter & Gamble Co., is currently featuring a contest for "P & G" soap in which 360 refrigerators and $21.000 in cash will be awarded over the six-week period of the campaign, which started May 20. Publicity is being given to the contest by radio and in newspapers and magazines. Contestants are asked to complete the sentence "I like P & G soap because . . ." in twenty-five words or less.

This design for a soap container, entered by Miss Marjorie King, was one of the prize winners in a Competition for Creative Design in Plastics conducted recently at the Carnegie Institute of Technology under the sponsorship of the Plaskon Company, Toledo.



Beach Soap Buys Marsh Co.

Beach Soap Co., Lawrence, Mass., has purchased the George E. Marsh Co., and Lysander Kemp & Sons Corp., Cambridge, Mass., from the Consolidated Rendering Co., Boston, according to a joint announcement from Col. A. L. Mercer, president, and G. R. Fulton, vice-president and general manager of Beach Soap, and Joseph W. Devorss, president of Consolidated. Beach Soap will continue to manufacture present Marsh and Kemp brands at its Lawrence plant. C. F. Mudgett, superintendent of Marsh, will transfer to Beach. Eastern sales representatives, Alfred Cowan, Frank E. Allen, and Fletcher S. Lawson, will become associated with Beach Soap, or its parent company, the Cowles Detergent Co., Cleveland. The Cowles Company of which Col. Mercer is also president, sells primarily in the laundry, janitor supply and metal fields, and Beach in the textile field. Beach Soap will be adding brands for the textile, laundry and metal industries.

Hecker Chairman Resigns

George K. Morrow, one of the founders and the first president of the original Gold Dust Corp., has just resigned as chairman of Hecker Products Corp., Indianapolis. Mr. Morrow stated that he was giving up his responsibilities because of health but hoped to remain connected with the company in an advisory capacity. He will continue as a director and member of the executive committee. Guy Lemmon, president and treasurer, remains as executive head of the company.

Emery Relocates N. Y. Office

Emery Industries, Inc., red oil and stearic acid producer, Cincinnati, has moved its New York office to larger quarters in the Woolworth building. The office previously maintained on the twenty-first floor has been moved to the thirteenth floor. The new telephone numbers are Cortland 7-4393 and 4394.

a Royal Line...

for a ROYAL PACKAGE!

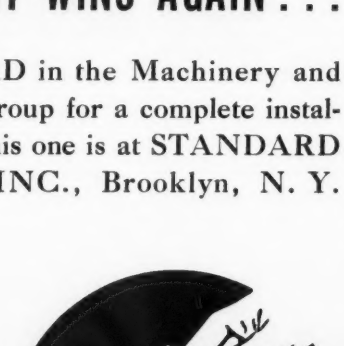
STOKES & SMITH PACKAGING EQUIPMENT WINS AGAIN...

TOP AWARD in the Machinery and Equipment Group for a complete installation line. This one is at STANDARD BRANDS, INC., Brooklyn, N. Y.

THE PRODUCTION SPEED IS 75 PACKAGES PER MINUTE

S & S Complete Automatic Packaging Lines feed cartons, bottom seal them, insert made-up bags, fill the desired amount of material, close and crimp bag (independent of the carton) then top seal the carton.

Perhaps this is why after one line was installed at Standard Brands additional lines have been added until now this is one of the most complete packaging plants in the country.



Complete Bag Can Be Removed.

STOKES & SMITH Co

PACKAGING MACHINERY — PAPER BOX MACHINERY

4915 SUMMERDALE AVE., PHILADELPHIA, U. S. A.

INVESTIGATE...S & S EQUIPMENT FOR YOUR PRODUCTS...FILLING...PACKAGING ...WRAPPING...AT SPEEDS TO SUIT YOUR NEEDS...15 TO 120 PER MINUTE.

New Soap Book

"Soap Manufacture" by J. H. Wigner, Ph. D., formerly chief chemist for William Gossage & Sons, Ltd., Widnes, has just been published by the Chemical Publishing Co., New York. The book covers principally the chemical phases of hard soap manufacture and comprises 170 pages. Little or no attention is given to mechanical processing which comprises such a large part of operations in the soap plant. The procedure outlined and recommended is rather complicated and considerably at variance with common American practice. The chapters on glycerine recovery are extremely well handled. In view of the comparatively narrow scope of the book, the broad title, "Soap Manufacture," does not appear to be particularly well chosen. —I.P.M.

Drum Names Committee Heads

C. L. Drum, newly elected president of the Chicago Drug and Chemical Association has just announced the following committee chairmen to serve during his term of office: D. F. Ruedig, membership; H. F. Woulfe, finance; J. A. A. Scott, banquet and entertainment; R. O. Hereford, golf; G. A. Wrisley, welfare; W. F. Bahe, publicity.

Mathieson Executive Changes

George W. Dolan and C. S. Glenn were recently elected vice-presidents of Mathieson Alkali Works, New York. Mr. Dolan, formerly assistant to the president of the company, is also a director of Mathieson. Mr. Glenn will retain his former title of director of operations.

Soap Factory Contract Awarded

The contract for construction of the million dollar Procter & Gamble soap factory in Dallas, Texas, has been awarded to H. K. Ferguson Co., Cleveland, Ohio. The factory will consist of a seven story building, 120x300 feet, and is now being constructed on a fifty-acre site on South Lamar Street which the company has owned for a number of years, and on which is situated its big oil and shortening plant. More than 200 people will be employed in the new factory. Henry Manley of New York is the architect for the plant. The engineering work necessary in revising and enlarging the present power plant will be done by Procter & Gamble engineers.

SOAP PLANT COSTS . . .

How can the average soaper cut costs in his plant without reducing quality or efficiency? A study of this problem and some practical answers by J. M. Vallance in the next issue of "Soap and Sanitary Chemicals."

Verona Names Sales Agent

The Aromatics Division of General Drug Co., New York, is now sole distributor of aromatic chemicals made by Verona Chemical Co., New York.

J. B. Williams Earnings Up

J. B. Williams Co., Glastonbury, Conn., reports profits for 1939 as $261,450 against $157,917 in 1938.

Barrel Plant Opened

A new steel barrel plant has just been opened at Harahan, La., a suburb of New Orleans, according to an announcement made by S. Bennett, president of Bennett Mfg. Co., Chicago. The plant is situated on a 7½ acre tract of land near the Huey Long Bridge, on the Illinois Central Railroad, and is equipped to produce a full line of steel containers. Mr. Maumus Claverie, vice-president, who for the past six years has been southern district manager of Wilson & Bennett Mfg. Co., is manager of the New Orleans plant.

Cite Stiefel Soap Co.

The Federal Trade Commission has issued a complaint against Stiefel Medicinal Soap Co., Preston Hollow, N. Y., distributors of medicinal soaps. The complaint charges the company with misrepresentation in the sale of its products by implying that they are identical in quality with imported medicinal soaps made by J. D. Stiefel, Offenbach-on-the-Main, Germany. The company was formerly agent for the imported soaps in the United States but it is alleged that the company has sold none of the J. D. Stiefel soaps since 1936.

Soaps at Hospital Show

Surgical soaps and cleaning compounds for hospital use were exhibited by Midland Chemical Laboratories, Inc., Dubuque, Ia., at the eleventh annual Tri-State Hospital Assembly in Chicago May 1 to 3. Included in the display was "Lohador" liquid surgical soap for general hospital use, "Babeoleum" for use on tender infant skins, "Lohzone" deodorants, "Shiloh" porcelain cleaner, "Ev-R-Glo" water-resistant emulsion wax, "Cleansoleum" liquid cleaner for scrubbing linoleum, "Laqairlustr" polish, "Tileoleum" for floor maintenance, "Flusholeum" for toilet bowls, "Mill-O-Cide" for insect control and 'Soil Solv," a quick acting liquid floor cleanser only recently added to the company's line. Lee S. Jacobi, Chicago sales manager, directed the exhibit.

J. B. Ford Sales Co., Wyandotte, Mich., displayed their line of detergents for removing dirt from marble, tile, enamel or painted surfaces. F. W. Rayl, Chicago district salesman, handled inquiries at the booth. Antiseptol Co., Chicago, had a brightly decorated booth in which a "foam fountain" created huge soap bubbles to stress the line of green soaps presented by company president Earl McDowe and a corps of assistants. Other exhibitors of soaps, cleaners, water softeners and other sanitary products essential to hospital maintenance included: Huntington Laboratories, Huntington, Ind.; Refinite Corp., Omaha, Nebr.; and Vestal Chemical Laboratories, Inc., St. Louis. Among speakers on the convention program was Joseph T. Davis, Chicago soap chemist, who addressed the Hospital Housekeepers Section on the subject of "Soap Chemistry."

Shulton Conducts Contest

Shulton, Inc., New York, is now conducting its second national window display contest open to all stores carrying its "Early American Old Spice" line of men's toiletries for Father's Day. Prizes to the twenty-six stores entering the best displays will total $1,400 and in addition each store participating will receive a $5.00 set of toiletries as an entry award. Miss Irma Ericsson is contest manager for the Shulton company.

C-P-P Coupon Drive on Coast

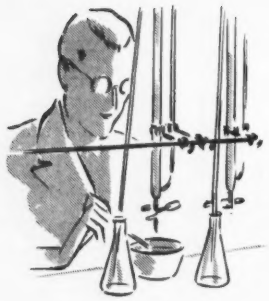
Certificates simulating bond coupons were distributed from door to door in California cities, during the first week in May by Colgate-Palmolive-Peet Co. They offered two cakes of "Palmolive" soap free with the purchase of one large package of "Concentrated Super Suds"; two cakes of "Crystal White Soap" free with the purchase of three cakes of the same soap; and three cakes of "Crystal White Soap" free with the purchase of one package of "Peet's Granulated Soap."

Bristol-Meyers Earnings Down

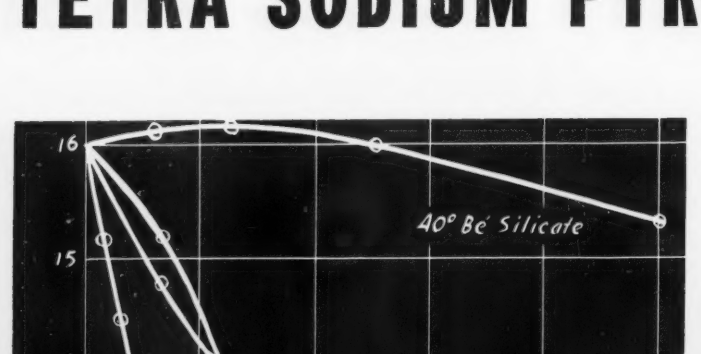
For the quarter ending March 31, 1940, Bristol-Meyers Co., Hillside, N. J., reports profits of $773,031, or $1.13 per share. For the same quarter of 1939, net income was $870,870, or $1.27 per share. Profits for twelve months ended March 31, 1940 were $2,281,940, or $3.35 a share as compared to $2,505,834, or $3.67 a share for the previous twelve month period.

1-Cent Sale on "Sweetheart"

A six week advertising campaign was recently started by Manhattan Soap Co., New York, makers of "Sweetheart" soap, for a promotion program built around an offer of a cake of "Sweetheart" soap for a penny with every three at the regular price. Newspapers of important eastern cities carried initial copy, and two radio programs sponsored by Manhattan will support the campaign.



NEW STUDIES COVERING THE USE OF COMMON SOAP BUILDERS CONFIRM THE SUPERIOR EFFECTIVENESS OF VICTOR TETRA SODIUM PYROPHOSPHATE



THE comparative ineffectiveness of common water softening agents as soap builders has been confirmed by recent studies made in the research laboratories of the Victor Chemical Works.

Two grams of soap plus builder were dissolved in 500 cc of solution and titrated against 50 cc of hard water until permanent suds formed. In the adjoining chart the ordinate shows the cc's of soap solution required to produce permanent suds. 16.0 cc represents the requirement of 100% soap. The abscissa shows the weight of builder per gram of soap and the curves show the decrease in built-soap requirement as the amount of builder is increased.

Victor Tetra Sodium Pyrophosphate is shown to be the most effective soap-building agent under these common conditions.

IMPORTANCE TO HOUSEWIFE

The criterion of the housewife for judging the amount of soap to add is the formation of suds. By so limiting the amount of plain soap or ordinarily built soap used, a "flat" wash water at the end of the washing operation is a frequent occurrence. Such a wash water allows redeposition of the soil, may increase the total solids in the cloth, and makes rinsing very difficult. Victor TSPP, by conserving soap from water softening action, provides an effective solution to this problem.

VICTOR

Further Details on Request

HEADQUARTERS FOR... phosphates

VICTOR CHEMICAL WORKS, 141 W. Jackson Boulevard, Chicago, Illinois
Plants: Nashville, Tenn.; Mt. Pleasant, Tenn.; Chicago Heights, Ill.
Offices: New York, N. Y.; Kansas City, Mo.; St. Louis, Mo.; Greensboro, N. C.

Contracts Awarded

Army Soap Awards

In a recent opening by the Army Quartermaster Corps at Brooklyn, the following contracts were awarded: to New Brunswick Labs., New York, 16,000 lbs. castile soap at 13.45c; to Stevens Soap Corp., Brooklyn, 15,000 lbs. soda ash at 1.66c; to Sterling Supply Corp., Philadelphia, 48,000 lbs. laundry soap at 5.71c.

Toilet Soap Bid

Los Angeles Soap Co., Los Angeles, was low bidder on 42 drums of liquid toilet soap at $5.94 in a recent opening by the Treasury Procurement Supply, Washington, D. C.

Floor Wax Bids

R. M. Hollingshead Corp., Camden, N. J., submitted a low bid of 33.5c a gallon on 14,500 gals. liquid floor wax in a recent opening by the Post Office Supply Department, Washington, D. C. In another opening by the same department, Mitchell-Rand Mfg. Co., New York, submitted a low bid of 10.45c per lb. on 2,000 lbs. floor wax and 8.92c on 4,020 lbs. floor wax.

Soda Ash Bid

Morris & Eckels Co., Baltimore, bid low on 60,000 lbs. soda ash at 1.175c in a recent opening by the Treasury Procurement Supply Department, Washington, D. C.

Floor Wax Bid

Mitchell-Rand Mfg. Co., New York, was low bidder on 3,000 lbs. paste floor wax at $316 in a recent opening by the Panama Canal Supply, Washington, D. C.

Chip Soap Award

Pacific Brewing & Malting Co., Tacoma, Wash., was awarded the contract on 6,000 lbs. chip soap at 5.7c, fob, Tacoma, in a recent opening by the Army Quartermaster, Washington, D. C.

Cresol Solution Bid

James Good Co., Philadelphia, bid low on 400 gals. cresol solution at 81.8c in a recent opening by the Treasury Procurement Supply Department, Washington, D. C.

Rust Preventive Awards

Dearborn Chemical Co., Chicago, was awarded the contract on 10,000 lbs. heavy rust preventive compound in 5-lb. cans at 6.5c in a recent opening by the Army Ordnance Department for Rock Island Arsenal, Ill. In the same opening R. M. Hollingshead Co., Camden, N. J., was awarded the contract on 200,000 lbs. medium rust preventive compound in 5-lb. tins at 5.19c lb. and on 100,000 lbs. in 25-lb. steel shipping pails at 5.14c lb.

Treasury Soap Bid

Colgate - Palmolive - Peet Co., was low bidder on 3,200 lbs. toilet soap at 8.75c in a recent opening by the Treasury Procurement Supply, Washington, D. C.

Floor Wax Bid

Mitchell-Rand Mfg. Co., New York, bid low on 440 gals. liquid floor wax at 42.68c in a recent opening by the U. S. Treasury Dept., Washington, D. C.

Sam Houston Soap Awards

Kirkman & Son, Brooklyn, were awarded the contract on 234,240 lbs. of laundry soap at 3.88c in a recent opening by the Army Quartermaster at Fort Sam Houston, Texas. Other awards at the same opening went to Eagle Soap Co., Brooklyn, who bid low on 16,500 10-oz. cakes of grit soap at 2.85c and 93,000 9-oz. cakes of grit soap at 2.34c and to Procter & Gamble Distributing Co., Dallas, Texas, low bidder on 2,700 cakes of toilet soap at 1c and on 25,563 cakes of toilet soap at 2.9c.

Insecticide Bid

U-San-O Corp., St. Louis, Mo., submitted a low bid of $358.80 on 520 gals. of insecticide spray in a recent opening by the Army Quartermaster at Jefferson Barracks, Mo.

Green Soap Bid

James Good Co., Philadelphia, was low bidder on 5,400 lbs. of green soap at $555.12 in a recent opening by the Panama Canal Supply at Washington, D. C.

Disinfectant Bids

Wm. Cooper & Nephews, Chicago, submitted the low bid of $870 on 1,500 gals. of cresylic disinfectant solution in a recent opening by the Panama Canal Supply, Washington, D. C. At the same opening Crystal Soap & Chemical Co., Philadelphia, submitted a low bid of $897 on 1,500 gals. of cresylic disinfectant solution.

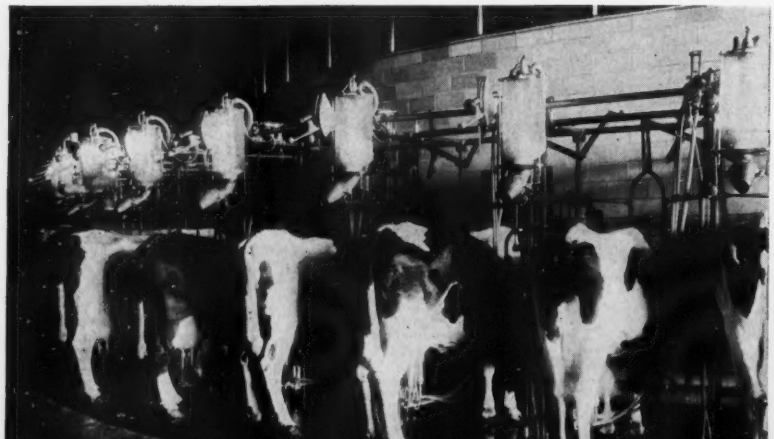
Chicago Golf Tournament

Over 60 members and guests of the Golf Auxiliary of the Chicago Drug and Chemical and Chicago Perfumery, Soap and Extract Associations were on hand for the first meet of the year held at Itasca Country Club, May 21st. A heavy rain which started in the middle of the afternoon played havoc with the scores of everyone except the early finishers. The following were prize winners: Class A—1st, M. B. Vance, 91-21-70; 2nd, J. C. Towns, 84-12-72; 3rd, H. S. Lyon, 89-17-72; Class B—1st, Ray Morris, 95-23-72; 2nd, A. J. Westerman, 94-21-73; 3rd, A. C. Stepan and J. T. James tied, 93-18-75; Class C—1st, A. J. Andersen 102-30-72; 2nd, A. H. Carnes, 112-38-74; 3rd, B. J. Townsend, 106-30-76; Class D—1st, A. A. Edwards, 121-44-77; 2nd, A. O. Nelson, 115-36-79; 3rd, C. L. Drum, 115-35-80. Guest prizes were won by Hans Leopold, Eugene Jaffe, Ray Klein and D. K. Snow. Tournaments will be held once a month through September. The September one will be the annual inter-city meet with Detroit and is to be held at Olympia Fields C. C.

U.S.I. ALCOHOL NEWS

June ★ A Monthly Review of Technical Developments for Chemists and Executives ★ 1940

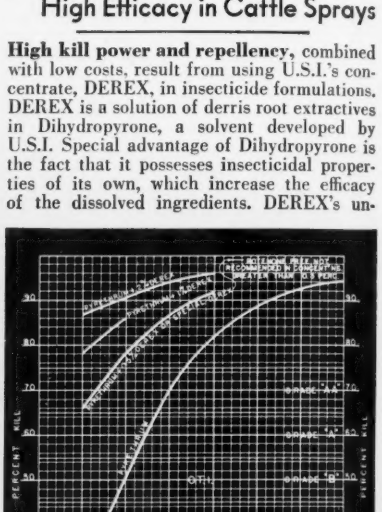
DEREX BOOSTS INSECTICIDAL POWER



The dairy industry can benefit by the high repellency of cattle sprays formulated with DEREX. Spray manufacturers will find that its use permits low formulation costs.

U.S.I. Concentrate Displays High Efficacy in Cattle Sprays

High kill power and repellency, combined with low costs, result from using U.S.I.'s concentrate, DEREX, in insecticide formulations. DEREX is a solution of derris root extractives in Dihydropyrone, a solvent developed by U.S.I. Special advantage of Dihydropyrone is the fact that it possesses insecticidal properties of its own, which increase the efficacy of the dissolved ingredients. DEREX's unusually high repellency has made it a favorite with cattle spray manufacturers. Write U.S.I. for further information on DEREX.



Curve shows high kill power of Pyrethrum-DEREX mixtures, as determined by the Peet-Grady method.

ALCOHOL, BUTYL ACETATE USED IN NEW NAIL ENAMEL

High flexibility and adhesion, less tendency to crack and peel are advantages claimed for a recently patented fingernail enamel composition. Propyl methacrylate resins confer these advantages, says the patent. Typical formulation also includes cellulose nitrate, denatured alcohol 2B, butyl acetate, diamyl phthalate. (Denatured alcohol 2B, butyl acetate, diamyl phthalate are produced by U.S.I.)

TECHNICAL DEVELOPMENTS

For further information write U.S.I.

New antiseptic and mouth wash contains iodine, yet has no iodine taste, says the manufacturer. **(No. 340a)**

A color rinse is said to contain an ingredient that penetrates oil film on the hair, producing high sheen and brilliant color. **(No. 341a)**

A new adhesive is described as strong and waterproof. Maker says it is suitable for glass, metal, and plastic surfaces. **(No. 342a)**

A neutralizer is said to be suitable for neutralizing the odor of kerosene in household fly sprays without imparting additional odor. **(No. 343a)**

A cellophane cement is described as transparent, tasteless, odorless, moisture-proof, resistant to acids and alkalis, readily applied, adaptable to food packaging. **(No. 344a)**

A floor wax is said to result in a high gloss, without causing the surface to become slippery. **(No. 345a)**

S. D. Alcohol No. 42 is now available in a revised formula authorized by the Treasury Department. **(No. 346a)**

Water-dispersible lecithin can be prepared by dissolving the lecithin in ethyl lactate, it is claimed in a recent patent. It is said that the lecithin in this form is suitable for use in food products. **(No. 347a)**

A shampoo material is said to be suitable for making soapless shampoos. It is reported to contain compounds of protein degradation products with fatty acids. **(No. 348a)**

STERNO GALLEY STOVES COOK MAN-SIZED MEALS ON BOATS

Galley stoves that burn Sterno Canned Heat help the motor-boat, trailer or camp owner to cook tasty meals quickly and safely. Denatured alcohol, solidified by a congealing agent, is the basis of this convenient, non-spillable fuel.

New Trade Marks

The following trade-marks were published in the May issues of the *Official Gazette* of the United States Patent Office in compliance with Section 6 of the Act of September 20, 1905, as amended March 2, 1907. Notice of opposition must be filed within thirty days of publication. As provided by Section 14, fee of ten dollars must accompany each notice of opposition.

Trade Marks Filed

KLIP—This in solid letters describing insecticides. Filed by Stanco, Inc., Wilmington, Feb. 2, 1940. Claims use since Aug. 21, 1928.

DEOPINE—This in solid letters describing disinfectants. Filed by Western Chemical Co., St. Joseph, Mo., Feb. 9, 1940. Claims use since Feb. 4, 1927.

PRECISION—This in solid letters with drawing of calipers and automobile, describing automobile polishes and waxes. Filed by Precision Lubricants, Inc., Denver, Sept. 23, 1939. Claims use since July 1, 1939.

V—This within circle inside of triangle describing polish, cleaner and insecticides. Filed by American Products Co., Cincinnati, Oct. 28, 1939. Claims use since Nov. 1, 1934.

KALITE—This in solid letters describing self-polishing wax. Filed by Western Chemical Co., St. Joseph, Mo., Feb. 9, 1940. Claims use since July 23, 1929.

BUG-DUST-O-CIDE — This in solid letters over drawing of a bug with the words Bug Dust describing insecticides. Filed by Imperial Chemical Co., Shenandoah, Iowa, Dec. 11, 1939. Claims use since Mar. 15, 1938.

BRITEWAY—This in solid letters describing liquid cleaner. Filed by C. B. Dolge Co., Westport, Conn., Jan. 12, 1940. Claims use since May, 1936.

JARMEL — This in script letters describing toilet soap. Filed by Leland J. Arms, San Francisco, Feb. 13, 1940. Claims use since Jan. 25, 1940.

KLEK—This in solid letters describing soap. Filed by Colgate-Palmolive-Peet Co., Jersey City, Feb. 17, 1940. Claims use since Jan. 9, 1940.

BIMERPHEN — This in solid letters describing antiseptics. Filed by Sharpe & Dohme, Inc., Philadelphia, Nov. 29, 1939. Claims use since Nov. 21, 1939.

CONKEYS—This in reverse letters on background of contrasting color describing insecticides. Filed by G. E. Conkey Co., Cleveland, Dec. 15, 1939. Claims use since May 1, 1939.

LAVA—This in fancy letters on background of bubbles describing cleaning compound. Filed by Walter E. Jones, Hammond, Ind., Feb. 19, 1940. Claims use since Jan. 15, 1936.

JOHNNY-ON-THE-SPOT — This in reverse letters with drawing of doll, describing liquid cleaner. Filed by Wildon Co., Orange, N. J., Feb. 29, 1940. Claims use since Nov. 9, 1939.

AMOSOL — This in stencilled letters describing cleanser. Filed by Diversey Corp., Chicago, Mar. 4, 1940. Claims use since Mar. 1, 1924.

D&P SPRAY-TOX — This in solid letters describing insecticides. Filed by Doggett-Pfeil Co., Springfield, N. J., Dec. 3, 1938. Claims use since Oct., 1929.

MAGIC-MICRON—This in solid letters describing insecticides. Filed by Lucas Kil-Tone Co., Philadelphia, June 13, 1939. Claims use since May 18, 1939.

FLYGO-X—This in solid letters describing fly-repellant. Filed by A. Truman Patterson, Jr., Philadelphia, July 14, 1939. Claims use since May 17, 1939.

WEEVIL-NIP — This in solid letters describing insecticides. Filed by Western Chemical Co., St. Joseph, Mo., Feb. 9, 1940. Claims use since Apr. 28, 1926.

TY-REEN—This in solid letters describing antiseptics. Filed by Thymo Borine Labs., Milwaukee, Feb. 15, 1940. Claims use since Dec. 18, 1939.

DI-FUME—This in reverse letters above a star and the word "vaporizing" describing insecticides. Filed by Elkay Products Corp., New York, Jan. 29, 1940. Claims use since Nov. 1, 1938.

PARAPONT—This in solid letters describing paradichlorobenzene. Filed by E. I. duPont de Nemours & Co., Wilmington, Jan. 23, 1940. Claims use since Apr. 11, 1934.

O-SO-EZY—This in solid letters describing cleanser. Filed by O-Cedar Corp., Chicago, Nov. 12, 1938. Claims use since Sept. 30, 1913.

SPADE—This in solid letters describing shaving cream. Filed by Spade Products Co., New York, Jan. 27, 1940. Claims use since Jan. 16, 1940.

TUSSY—This in solid letters describing soap. Filed by Lehn & Fink Products Corp., Bloomfield, N. J., Feb. 24, 1940. Claims use since Sept. 12, 1939.

BLU-CHEK—This in solid letters with outline describing insecticides. Filed by General Chemical Co., New York, Mar. 21, 1940. Claims use since Feb. 13, 1940.

SUNSEAL—This in solid letters describing cleanser. Filed by Patent Cereals Co., Geneva, N. Y., Oct. 17, 1939. Claims use since Sept. 22, 1939.

TALLY—This in script letters describing soaps. Filed by Maximax Corp., Chicago, Feb. 19, 1940. Claims use since Dec. 9, 1939.

L C O—This in solid letters with bars above and below describing scouring crystals. Filed by Ray Lillie, Iowa City, Iowa, Dec. 17, 1938. Claims use since Dec. 1, 1937.

CAPITOL—This in solid letters over drawing of U. S. capitol dome describing water-softener.

Filed by Sam. Farruggia, Capitol Chemical Co., Chicago, Sept. 25, 1939. Claims use since January, 1937.

TOOTHFOAM — This in solid letters describing liquid dentifrice. Filed by Clarence H. Clark, Toothfoam Co., San Francisco, Feb. 12, 1940. Claims use since Feb. 6, 1940.

MECHLING'S — This in solid letters describing insecticides. Filed by General Chemical Co., New York, Mar. 13, 1940. Claims use since 1900.

CARDINAL—This in outline letters under drawing of a bird describing insecticides. Filed by Edward D. O'Connell, Cardinal Insecticide Co., Philadelphia, Mar. 16, 1940. Claims use since Mar. 4, 1940.

GREEN-LEAF — This in solid letters describing parasiticides. Filed by California Spray-Chemical Corp., Richmond, Cal., Mar. 23, 1940. Claims use since Mar. 15, 1940.

MATTSO—This in solid letters describing cleanser. Filed by Matthew F. Cain, Matt Soap Co., New Orleans, Mar. 9, 1939. Claims use since Jan., 1939.

PRIM—This in fancy letters describing shoe polish. Filed by William B. Lewis, Pickens, S. C., Feb. 28, 1940. Claims use since June 6, 1935.

"SOF"—This in solid letters describing cleaning compound. Filed by Davies-Young Soap Co., Dayton, O., Mar. 14, 1940. Claims use since Mar. 5, 1940.

85-38—This in stenciled letters describing cleaner. Filed by Devonshire-Artic Chemical Co., Boston, Mar. 25, 1940. Claims use since Oct. 31, 1938.

PERIORAL—This in italic letters describing tooth powder. Filed by Nathan Spitzer, New York, Mar. 14, 1939. Claims use since Feb. 26, 1939.

CALCIFORM—This in solid letters describing disinfectant. Filed by Dehls & Stein, Inc., Newark, N. J., Mar. 22, 1939. Claims use since 1915.

OUT-SECT—This in solid letters describing insecticides. Filed by Orville E. McKim, Port Chester, N. Y., Apr. 10, 1940. Claims use since Mar. 11, 1940.

Trade Marks Granted

377,280. Polish and cleaner. American Products Co., Cincinnati, O. Filed May 15, 1939. Serial No. 419,411. Published Sept. 5, 1939. Class 16.

377,362. Soap. Mary Chess, Inc., New York. Filed Dec. 20, 1939. Serial No. 426,761. Published Feb. 20, 1940. Class 4.

377,424. Saponaceous compounds. Shulton, Inc., New York. Filed May 26, 1939. Serial No. 419,880. Published Feb. 27, 1940. Class 4.

377,434. Insecticides. Rohm & Haas Co., Philadelphia. Filed June 28, 1939. Serial No. 421,052. Published Feb. 13, 1940. Class 6.

377,456. Cleaners. Charles M. Albion, Cambridge, Mass. Filed Aug. 24, 1939. Serial No. 422,921. Published Feb. 27, 1940. Class 4.

377,467. Antiseptics. Dairy Laboratories, Philadelphia. Filed Sept. 21, 1939. Serial No. 423,802. Published Feb. 6, 1940. Class 6.

377,540. Sun-tan oil. Parfums Charbert, Inc., New York. Filed Nov. 28, 1939. Serial No. 426,033. Published Feb. 27, 1940. Class 6.

377,544. Glycerine. Procter & Gamble Co., Cincinnati. Filed Nov. 29, 1939. Serial No. 426,068. Published Feb. 13, 1940. Class 6.

377,546. Antiseptics. Sharpe & Dohme, Inc., Philadelphia. Filed Nov. 29, 1939. Serial No. 426,073. Published Feb. 6, 1940. Class 6.

377,559. Detergent. Onyx Oil & Chemical Co., Jersey City. Filed Dec. 5, 1939. Serial No. 426,269. Published Feb. 20, 1940. Class 6.

377,560. Washing powder. Climalene Co., Canton, Ohio. Filed Dec. 6, 1939. Serial No. 426,287. Published Feb. 27, 1940. Class 4.

377,567. Germicide and antiseptic. Carbo-Fung Chemical Laboratory, Los Angeles. Filed Dec. 8, 1939. Serial No. 426,357. Published Feb. 13, 1940. Class 6.

377,579. Tooth powder. Willie Marie Boddie, Health-Tol Products Co., Detroit. Filed Dec. 11, 1939. Serial No. 426,423. Published Feb. 13, 1940. Class 6.

377,613. Insecticides. General Chemical Co., New York. Filed Dec. 20, 1939. Serial No. 426,770. Published Feb. 20, 1940. Class 6.

377,619. Dentifrice. M. W. Reinhardt & M. H. McSweeney, New York. Filed Dec. 22, 1939. Serial No. 426,844. Published Feb. 27, 1940. Class 6.

377,634. Antiseptic germicide. Sodiphrene Co., Kansas City, Mo. Filed Jan. 2, 1940. Serial No. 427,090. Published Feb. 27, 1940. Class 6.

377,720. Cleanser. Diversey Corp., Chicago. Filed Aug. 30, 1939. Serial No. 423,131. Published Nov. 21, 1939. Class 6.

377,736. Hand soap. Lano Co., Chicago. Filed Nov. 13, 1939. Serial No. 425,575. Published Mar. 5, 1940. Class 4.

377,777. Shoe polishes. Everett & Barron Co., Providence, R. I. Filed Dec. 16, 1939. Serial No. 426,646. Published Mar. 5, 1940. Class 4.

377,829. Cleaner. Masury-Young Co., Charlestown, Mass. Filed Jan. 5, 1940. Serial No. 427,160. Published Mar. 5, 1940. Class 4.

377,987. Toilet soap. Walt Disney Productions, Hollywood, Cal. Filed Dec. 15, 1939. Serial No. 426,610. Published Mar. 12, 1940. Class 4.

377,996. Soap. West Coast Soap Co., Oakland, Cal. Filed Dec. 21, 1939. Serial No. 426,752. Published Mar. 12, 1940. Class 4.

378,026. Soap. Wella Corp., New York. Filed Jan. 16, 1940. Serial No. 427,523. Published Mar. 12, 1940. Class 4.

378,036. Soap. Lever Bros. Co., Cambridge, Mass. Filed Jan. 20, 1940. Serial No. 427,673. Published Mar. 12, 1940. Class 4.

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Louis Stearns, retired New York soap manufacturer, died at his home in Tryon, N. C., May 18. He is survived by his widow, Mrs. Clara Stearns, and two daughters.

Raw Material Markets

As of May 29, 1940

NEW YORK—With the exception of a few items, prices in the market for oils, chemicals and other raw materials moved downward during May following the general downward trend of the commodity markets. The exceptions to this movement were, in practically every case, related to developments in the European war. Olive oil moved sharply upward as conditions seemed to forecast Italy's entry into the conflict. For the same reason, bergamot oil continued its sharp advance as exports of bergamot would be abruptly cut off should the Mediterranean be closed to commerce. Patchouli and caraway oils were also advanced. Pyrethrum prices were down. Soap fats exhibited largely a downward trend, with tallow, lard, coconut oil and corn oil all being quoted fractionally lower in a quiet market. Trade was reported to be slightly more active in the fatty acids.

Olive Oil

Toward the middle of this period, quotations on denatured olive oil started to advance rapidly lifting the price 25 cents to 30 cents over the range of last period to a current price of $1.25 a gallon. The possibility of a complete curtailment of shipment offerings from Greece in the event of Italy's entry into the war and the subsequent interference with shipping, has been the principal factor in the price advance.

Animal Fats

The trend of animal fat prices was steadily downward this period. Little activity in the market with buyers not interested in meeting prices asked by producers resulted in declining quotations on tallow, lard and greases. Reports from Washington, late in the period, that large quantities of lard would be purchased by the F. S. C. C. for relief distribution and for increasing the export trade, caused a slight rise in lard future prices. These were not realized, however, chiefly because of dullness in the outside market.

Coconut Oil

Crude coconut oil is currently quoted at 3 cents per pound in tankcars, a decline of ¼c from the price a month ago. Futures on the Pacific Coast are quoted at 2⅝ cents a pound in tankcars.

Palm Oil

No changes in the prices of palm oil this period. Quotations remain at a level of 2¼c cif New York. (See report, Page 35.)

Bergamot Oil

Continuing its advance in price, bergamot oil jumped another 75 cents per pound to be quoted at a current range of $6.90 to $7.25 per pound. This is another item controlled almost entirely by Italy. As reserves are low in the United States and shipment offerings from the source have been small, all stocks would eventually be eliminated if Italy entered the war.

Caraway Seed Oil

Quotations on caraway seed oil jumped a dollar a pound this period when the Netherlands, the principal producer of this material, was invaded by the German army, to be quoted currently at $4.25 per pound, nominal.

Pyrethrum

In line with a declining market for both Jap and Kenya flowers, prices for pyrethrum extracts were cut during the period. Standard 20 to 1 extracts were dropped to $5.75 and up as to quantity. First grade pyrethrum powder was quoted at 30c lb. Imports of flowers for April were 776,490 lbs.

Ellis Heads Wilson & Bennett

H. D. Ellis has been elected president of Wilson & Bennett Mfg. Co., manufacturers of steel contain-

ers and subsidiary of Inland Steel Co., Chicago. Mr. Ellis, formerly vice-president and treasurer, succeeds Wilfred Sykes who was chairman and president of the company. Mr. Sykes remains chairman of the board.

Storage of Oils and Fats

For the preservation of edible vegetable oils the most suitable antioxidant is vegetable lecithin added in the proportion of 0.5-1 per cent to such oils as cottonseed oil and soybean oil. For the preservation of edible animal oils, addition of antioxidants is not practical. The best results are obtained by the admixture of vegetable oil. e.g., 10 per cent of palm oil is effective in animal oils. For nonedible oils the most active antioxidants are hydroquinone and pyrocatechol, 0.1 per cent of hydroquinone being effective when added to castor oil. *Chem. Trade J. & Chem. Engineer* **106,** 222 (1940).

Raw Material Prices

(As of May 28, 1940)

Minimum Prices are for car lots and large quantities. Price range represents variation in quotations from different suppliers and for varying quantities

Chemicals

Acetone, C. P., drums	lb.	$ .07½	$ .08
Acid, Boric, bbls., 99½%	ton	106.00	138.00
Cresylic, drums	gal.	.68	.70
Low boiling grade	gal.	.68	.70
Muriatic, C. P., carboys	lb.	.08	—
Oxalic, bbls.	lb.	.10¾	.12
Adeps Lanae, hydrous, drums	lb.	.29	.30
Anhydrous, drums	lb.	.30	.31
Alcohol, Ethyl, U.S.P., bbls.	gal.	4.55	4.61½
Complete Denat., SD 1, drums, ex.	gal.	.28½	.34½
Alum. Potash lump, bbls.	lb.	.04	—
Ammonia Water, 26°, drums	lb.	.02¼	.02½
Ammonium Carbonate, tech., bbls.	lb.	.08	—
Bentonite, 1, works, 325 mesh	ton	—	16.00
Bentonite, 2, works, 200 mesh	ton	—	11.00
Bleaching Powder, drums	100 lb.	2.00	3.35
Borax, pd., cryst., bbls., kegs	ton	58.00	74.00
Carbon Tetrachloride, car lots	gal.	.66½	1.10
L. C. L.	gal.	.73	1.20
Caustic, see Soda Caustic, Potash Caustic			
China Clay, filler	ton	10.00	26.00
Cresol, U.S.P., drums	lb.	.09¾	.10¼
Creosote Oil	gal.	.13½	.14½
Feldspar, works (200 to 325 mesh)	ton	32.00	35.00
Formaldehyde, bbls.	lb.	.05½	.06
Fullers Earth	ton	15.00	—
Glycerine, C.P., drums	lb.	.12½	.13
Dynamite, drums	lb.	—	Nom.
Saponification, drums	lb.	.08¾	.09
Soap, lye, drums	lb.	.07¾	.08¼
Hexalin, drums	lb.	.80	—
Lanolin, see Adeps Lanae.			
Lime, live, bbls.	per bbl.	—	2.45
Mercury Bichloride, kegs	lb.	2.04	2.19
Napthalene, ref. flakes, bbls.	lb.	.06¾	.07
Nitrobenzene (Mirbane) drums	lb.	.08	.09
Paradichlorbenzene, drums	lb.	.12½	.15½
Petrolatum, bbls. (as to color)	lb.	.04¼	.08
Phenol (Carbolic Acid), drums	lb.	.13	.14¾
Pine Oils, bbls.	gal.	.53	.59
Potash, Caustic, solid	lb.	.06¼	.06¾
Flake, 88-92%	lb.	.07	.07½
Liquid, 45% basis	lb.	.03½	.03¾
Potassium Carbonate, solid	lb.	.06½	.06¾
Liquid	lb.	.02¾	.03⅛
Pumice Stone, powder	100 lb.	3.50	4.50
Rosins (600 lb. bbls. gross for net)—			
Grade D to H, basis 280 lbs.	bbl.	5.15	5.90
Grade I to N	bbl.	5.90	6.55
Grade WG to X	bbl.	6.90	7.30
Wood	bbl.	4.55	6.40
Rotten Stone, pwd., bbls.	lb.	.08½	.10
Silica	ton	20.00	27.00
Soap, Mottled	lb.	.04⅛	.04½
Olive Castile, bars	lb.	.17	—
Olive Castile, powder	lb.	.26	.29
Powdered White, Neutral	lb.	.19	.21
Olive Oil Foot, bars, 68-70%	lb.	.09	—
Green, U.S.P.	lb.	.08	.09
Tallow Chips, 88%	lb.	.07⅛	.07¾
Soda Ash, cont., wks., bags, bbls.	100 lb.	1.10	1.35
Carlots, in bulk	100 lb.	.90	.95
Soda Caustic, cont., wks., solid	100 lb.	2.30	—
Flake	100 lb.	2.70	2.95
Liquid, tanks, 47-49%	100 lb.	1.95	—
Soda Sal., bbls.	100 lb.	1.10	1.30
Sodium Chloride (Salt)	ton	15.00	15.60
Sodium Fluoride, bbls.	lb.	.07	.08¼
Sodium Hydrosulfite, bbls.	lb.	.16	.17
Sodium Metasilicate, ground	100 lb.	3.75	4.80
Crystalline	100 lb.	2.35	3.35
Sodium Pyrophosphate	100 lb.	5.10	5.30
Sodium Silicate, 40 deg., drum	100 lb.	.80	1.20
Drums, 52 deg. wks.	100 lb.	1.40	1.80
Tar Acid Oils, 15-25%	gal.	.22	.28
Triethanolamine	lb.	.19	.20
Trisodium Phosphate, bags, bbls.	lb.	.0225	.0245
Zinc Oxide, lead free	lb.	.06½	.07¾

Oils — Fats — Greases

Babassu, tanks, futures	lb.	.06	Nom.
Castor, No. 1, bbls.	lb.	.13¼	.13¾
No. 3, bbls.	lb.	.12¾	.13¼
Coconut (without excise tax)			
Manila, tanks, N. Y.	lb.	.03	—
Tanks, Pacific Coast, futures	lb.	.02⅝	—
Copra, bulk, coast	lb.	.0160	Nom.
Corn, tanks, mills	lb.	.05¾	.06
Cottonseed, crude, tanks, mill	lb.	.06¼	—
PSY, futures	lb.	.07	.07¼
Fatty Acids—			
Corn Oil, tanks	lb.	.09	.09¼
Coconut Oil, tanks, Twitchell	lb.	.10	.10¼
Cotton Oil, tanks	lb.	.05¾	.06
Settled soap stock, Chicago	lb.	.03	.03¼
Boiled soap stock, 65%, Chi.	lb.	.04	.04¼
Foots, 50%, Chicago	lb.	.01¾	.02
Red Oil, bbls., dist. or sapon.	lb.	.07½	.08½
Tanks	lb.	.07	—
Stearic Acid,			
Double pressed	lb.	.10½	.11½
Triple pressed	lb.	.13¼	.14½
Greases, choice white, tanks, Chi.	lb.	.04⅜	.04½
Yellow	lb.	.04	—
Lard, city	lb.	.05¾	.05⅞
Linseed, raw, bbls.	lb.	.1080	.1100
Tanks, raw	lb.	.0980	.1000
Olive, denatured, bbls., N. Y.	gal.	1.25	Nom.
Foots, bbls., N. Y.	lb.	.08¾	Nom.
Palm, Sumatra, cif. New York	lb.	.02¼	.02¾
Palm, kernel, shipment	lb.	No Prices	
Soya Bean, domestic, tanks, crude	lb.	.06⅝	.07⅜
Stearine, oleo, bbls.	lb.	.05⅞	—
Tallow, special, f.o.b. plant	lb.	.04¼	—
City, ex. loose, f.o.b. plant	lb.	.09¾	—
Teaseed Oil, crude	lb.	.12½	Nom.
Whale, refined	lb.	.0910	—

(As of May 28, 1940)

Essential Oils

Almond, Bitter, U.S.P.	lb.	$2.75	$3.00
Bitter, F.F.P.A.	lb.	2.85	3.10
Sweet, cans	lb.	.75	.80
Anise, cans, U.S.P.	lb.	.68	.70
Bay, cans	lb.	1.20	1.25
Bergamot, coppers	lb.	6.90	7.25
Artificial	lb.	1.35	3.00
Birch Tar, rect., cans	lb.	.75	.80
Crude, cans	lb.	.25	.26
Bois de Rose, Brazilian	lb.	1.60	1.65
Cayenne	lb.	1.70	1.80
Cade, cans	lb.	.55	.65
Cajeput, native, cans	lb.	.67	.71
Calamus, cans	lb.	8.25	8.50
Camphor, Sassy, drums	lb.	.30	.32
White, drums	lb.	.33	.35
Cananga, native, cans	lb.	1.60	1.65
Rectified, cans	lb.	1.85	2.25
Caraway Seed	lb.	4.25	Nom.
Cassia, Redistilled, U.S.P.	lb.	1.25	1.30
Cedar Leaf, cans	lb.	.80	.85
Cedar Wood, light, drums	lb.	.22	.24
Citronella, Java, drums	lb.	.37	.38
Citronella, Ceylon, drums	lb.	.40	.41
Clove, U.S.P., cans	lb.	1.30	1.35
Eucalyptus, Austl., U.S.P., cans	lb.	.69	.72
Fennel, U.S.P., cans	lb.	1.90	2.25
Geranium, African, cans	lb.	2.75	3.10
Bourbon, cans	lb.	2.75	3.10
Turkish	lb.	2.25	2.50
Hemlock, tins	lb.	.80	.85
Lavender, U.S.P., cans	lb.	2.50	2.80
Spike, Spanish, cans	lb.	1.10	1.55
Lemon, Ital., U.S.P.	lb.	3.85	4.50
Cal.	lb.	2.85	—
Lemongrass, native, cans	lb.	.85	.90
Linaloe, Mex., cases	lb.	1.30	1.45
Nutmeg, U.S.P., cans	lb.	2.40	2.50
Orange, Sweet, W. Ind., cans	lb.	2.00	2.10
Italian cop	lb.	3.80	5.00
Distilled	lb.	.90	—
California, expressed	lb.	1.25	1.60
Origanum, cans, tech.	lb.	1.05	1.45
Patchouli	lb.	7.50	7.75
Pennyroyal, dom.	lb.	3.00	Nom.
Imported	lb.	2.25	2.75
Peppermint, nat., cans	lb.	2.70	2.95
Redis., U.S.P., cans	lb.	2.95	3.20
Petitgrain, S. A., cans	lb.	1.55	1.60
Pine Needle, Siberian	lb.	1.30	1.35
Rosemary, Spanish, cans	lb.	.67	.68
drums	lb.	.62	.63
Sandalwood, E. Ind., U.S.P.	lb.	5.25	5.50
Sassafras, U.S.P.	lb.	1.15	1.20
Artificial, drums	lb.	.70	.71
Spearmint, U.S.P.	lb.	2.25	2.30
Thyme, red, U.S.P.	lb.	.80	1.75
White, U.S.P.	lb.	.95	1.95
Vetivert, Bourbon	lb.	8.50	15.00
Ylang Ylang, Bourbon	lb.	4.25	6.50

Aromatic Chemicals

Acetophenone, C. P.	lb.	$1.60	—
Amyl Cinnamic Aldehyde	lb.	1.70	$2.00
Anethol	lb.	1.10	1.15
Benzaldehyde, tech.	lb.	.55	.60
U.S.P.	lb.	.95	1.15
Benzyl, Acetate	lb.	.44	.49
Alcohol	lb.	.63	.68
Citral	lb.	1.40	3.10
Citronellal	lb.	.75	.80
Citronellol	lb.	1.60	1.85
Citronellyl Acetate	lb.	4.00	7.00
Coumarin	lb.	2.75	3.00
Cymene, drums	gal.	.90	1.25
Diphenyl oxide	lb.	.50	.55
Eucalyptol, U.S.P.	lb.	.80	.85
Eugenol, U.S.P.	lb.	1.75	2.00
Geraniol, Domestic	lb.	.60	3.00
Imported	lb.	2.00	3.00
Geranyl Acetate	lb.	1.20	2.50
Heliotropin	lb.	3.00	3.20
Hydroxycitronellal	lb.	2.00	2.50
Indol, C. P.	lb.	32.00	34.00
Ionone	lb.	2.50	4.15
Iso-Eugenol	lb.	2.80	4.25
Linalool	lb.	2.10	3.30
Linalyl Acetate	lb.	2.50	3.00
Menthol	lb.	2.50	3.60
Methyl Acetophenone	lb.	2.50	3.00
Anthranilate	lb.	2.10	2.25
Paracresol	lb.	4.50	6.00
Salicylate, U.S.P.	lb.	.35	.37
Musk Ambrette	lb.	3.65	3.95
Ketone	lb.	3.70	4.10
Xylene	lb.	1.05	1.20
Phenylacetaldehyde Sp.	lb.	2.10	2.50
Phenylacetic Acid	lb.	1.75	3.00
Phenylethyl Alcohol	lb.	2.50	3.35
Rhodinol	lb.	5.55	10.80
Safrol	lb.	1.00	1.10
Terpineol, C. P., drs.	lb.	.25	—
Cans	lb.	.28	—
Terpinyl Acetate, 25 lb. cans	lb.	.82	.85
Thymol, U.S.P.	lb.	1.55	1.60
Vanillin, U.S.P.	lb.	2.50	2.75
Yara Yara	lb.	1.55	1.80

Insecticide Materials

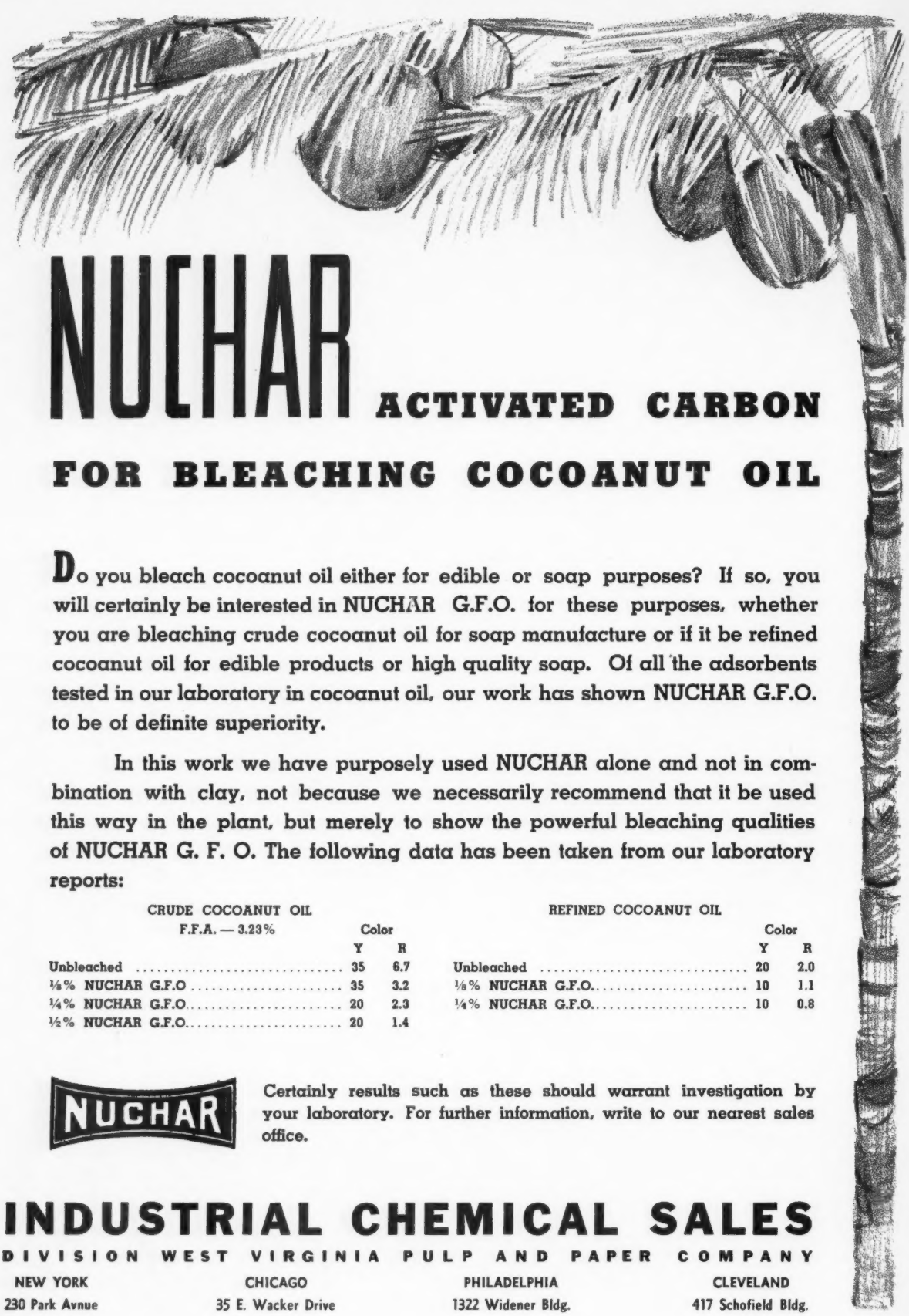
Insect Powder, bbls.	lb.	.30	.32
Pyrethrum Extract			
5 to 1	gal.	1.55	1.75
20 to 1	gal.	5.75	6.00
30 to 1	gal.	8.50	8.75
Derris, powder—4%	lb.	.18	.22
Derris, powder—5%	lb.	.24	.28
Cube, powder—4%	lb.	.19	.21
Cube, powder—5%	lb.	.23	.25

Gums

Arabic, Amb. Sts.	lb.	.08½	.09
White, powdered	lb.	.12½	.13
Karaya, powdered No. 1	lb.	.14	.33
Tragacanth, Aleppo, No. 1	lb.	2.65	2.70
Flake	lb.	No Prices	

Waxes

Bees, white	lb.	.35	.37
African, bgs.	lb.	.24	.25
Refined, yel.	lb.	.31	.36
Candelilla, bgs.	lb.	.18½	.19
Carnauba, No. 1, yellow	lb.	.73	.75
No. 2, N. C.	lb.	.67	.68
No. 3, Chalky	lb.	.58	.60
Ceresin, yellow	lb.	.11½	.15
Paraffin, ref., 125-130	lb.	.0675	.0680



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CRUDE COCOANUT OIL
F.F.A. — 3.23%

	Color Y	Color R
Unbleached	35	6.7
⅛% NUCHAR G.F.O	35	3.2
¼% NUCHAR G.F.O.	20	2.3
½% NUCHAR G.F.O.	20	1.4

REFINED COCOANUT OIL

	Color Y	Color R
Unbleached	20	2.0
⅛% NUCHAR G.F.O.	10	1.1
¼% NUCHAR G.F.O.	10	0.8

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Production Section

A section of SOAP devoted to the technology of oils, fats, and soaps published prior to Jan. 1, 1932, as a separate magazine under the title, *Oil & Fat Industries.*

Turkey Red Oil

TURKEY red oil is prepared by the sulfonation of castor oil, olive oil, a mixture of the two or of their fatty acids. The general method of preparation consists of treating neutral triglycerides with 66° Be. sulfuric acid (sp. gr. 1.84). Three operations are involved, sulfonation, neutralization and washing.

The reaction of concentrated sulfuric acid on the oil results in complex chemical processes. Not only ricinoleic acid and its sulfuric ester are produced, but also other compounds such as dihydroxy stearic acid and its ester and diricinoleic acid and its sulfuric ester. The first step is carried out in a stoneware vessel, or in an enamelled iron or lead-lined vessel, or in wood. An automatic stirrer should be designed to give good mixing and must be acid resistant, preferably lead-coated. The apparatus must also be fitted with a thermometer.

The castor oil is introduced into the vessel at a temperature of 15-20° C. (59-68° F.). The necessary amount of sulfuric acid, from one-eighth to one-third the amount of the oil, depending on the intended use of the product, — is admitted slowly from a glass container through an outlet of suitable material. The temperature gradually rises but must not be allowed to go over 40° C. (104° F.) and is preferably kept to 35° C. (95° F.). Should the temperature reach the upper limit, the flow of acid is stopped and stirring is continued until the temperature is lowered to 35° C., when acid is again allowed to flow in. If a double-walled vessel is used, cooling is easily brought about by running cold water through the outer vessel. After all of the acid is added, stirring is continued for several hours and then the oil is allowed to stand over night at as even a temperature as possible. Reaction continues during this period of standing.

After this period of sulfonation, washing can be started the next morning. This can be carried out in the same vessel or the oil can be run into the second vessel for washing. Water is added very gradually in order to avoid the formation of lumps and flocks. During the addition of water the oil becomes thinner and soon forms a milky white emulsion. It is advisable in order to promote separation of the wash water, to use a 10 per cent solution of table salt or preferably of Glaubers salt, sodium sulfate. The Glaubers salt retards decomposition of the esters by suppressing electrolytic dissociation of sulfuric acid. A little alkali, less than that necessary for neutralization, can be added to the wash water in the form of caustic soda.

After the mixture has stood for a time, the third and last process of neutralization occurs. The wash water is first carefully drawn off, as well as a milky layer which forms between the oil and water layers. When only the oil is left, caustic potash, caustic soda, or ammonia is added to neutralize fatty acids and excess sulfuric acid remaining in the oil. The oil first turns white, becomes turbid, and then clears as more alkali is added, finally assuming the golden yellow color of honey. The oil is left faintly acid in reaction, as otherwise it may become thick and turbid.

Water can be added to the product to give the desired fatty-acid content. The commercial so-called 100 per cent and 50 per cent sulfonated oils have a fatty-acid content of 74 and 37 per cent respectively. The fatty-acid content is about three-fourths the commercial sulfonate rating. The product finds varied uses because of its greater stability than soap toward acids, and toward calcium and magnesium salts. For some special uses, it is advantageously mixed with solvents such as trichloroethylene, hexaline, methyl hexaline, etc.

In the preparation of Turkey red oil as in the preparation of soap, the choice of the original materials is of great importance. For good color and quality in the finished product the oil has to be of good quality. Castor oil of the first pressing gives a clear golden yellow while that of the second pressing gives a green to brown product.

Methods of analysis of sulfonated oils are similar to those used for soap. The degree of sulfonation is calculated from the determination of organically bound SO_3 (a) and the fat content (b) by the formula:

x equals $\frac{373 \times a}{b}$. As in the making of soap, the sulfonation of oils requires a certain amount of experience and skill, although the method sounds exceedingly simple. J. K. V. *Seifensieder-Ztg.* **67,** 88, 98 (1940).

Structure of Fats

Textbooks published as late as 1929 inferred that the simple triglyceride structure of fats is the common rather than the uncommon form. Our chemical knowledge of fats is now as complete as that of any other major group of naturally occurring compounds. Due to the development of efficient high-vacuum pumps and distillation methods, newer oxidation methods, and the physical methods of determining structural units, we now know that the distribution of fatty acids in the glyceride molecules follows the law of probability. If there is an approximately even concentration of 3 fatty acids, the glycerides will in all probability be made up of one acid from each acid class. In case one acid predominates, there will in all probability be an appreciable amount of the triglyceride of that acid. W. A. Riddell. *Canadian Chemistry & Process Industries* **24,** 204 (1940).

Suspending Power

The suspending power of various types of detergents and detergent aids was determined by measuring photometrically the darkening of samples of white cotton fabric when shaken in a suspension of solid particles of Ilmenite Black. Simple alkalies such as soda ash and caustic soda cause a pronounced increase in the deposition of ilmenite on the fabric, or lowering of suspending power, both in the presence and absence of soap. Silicates exert a protective action. Brightness of the fabric increases rapidly to an optimum value at concentrations which decrease with increasing SiO_2:Na_2O ratio; the more siliceous the silicate, the lower the optimum concentration to produce maximum suspending power. The optimum protective action of the silicates is approximately equal to that of a 0.1 per cent solution of sodium oleate.

Sodium hexametaphosphate and sodium pyrophosphate show excellent suspending power,—considerably more than mono-, di-, and trisodium phosphates. Hexametaphosphate exerts a strong protective action down to concentrations of 5-10 parts per million. A similar effect is shown with the pyrophosphate at these low concentrations.

The suspending power of soaps depends markedly on the length of the carbon chain of the fatty acid present. The concentration at which the optimum brightness of fabric is reached for sodium laurate having 11 carbon atoms in the chain is many times the concentration required in the case of sodium stearate which has 17 carbon atoms in the chain. Detergents of the long-chain alkyl sulfate type possess relatively low suspending power. J. Powney and R. W. Noad. J. Textile Institute **30,** 1157-71.

Modified Soaps

VARIOUS ingredients are added to produce special soaps to enhance their cosmetic value, such as superfatting, or adding casein or glycerine. Lanolin has proved a very satisfactory superfatting agent. For toilet soaps, 1-3 per cent is milled into the soap flakes. With semiboiled soap, 5-10 per cent of lanolin may be used and is mixed in with the molten fat charge to be saponified.

Casein soaps are supposed to be especially mild and therefore suitable for use on sensitive skins. Casein pastes are freshly prepared by soaking the casein with an equal quantity of cold water and adding twice the quantity of hot water containing 5 per cent of borax based on the casein content. The mixture is warmed and stirred until homogeneous. A hot 4 per cent solution of caustic soda is then added to the mass and stirred to a pasty consistency. The paste is added to the warm fluid soap. By this method the casein undergoes the drying process with the soap.

An alternative method is to incorporate the casein during the milling process. For this the casein is prepared as described, including the addition of borax. Then 20 per cent of sodium silicate of 38°Be. is added, calculated on the amount of casein. This produces a plastic mass which is mixed in a kneading machine. On cooling the mass turns into a crumbling material which may be mixed in the proportion of 10 per cent with soap flakes.

Glycerine soap is not a superfatted soap but on the contrary is recommended for use on greasy skins. A formula for a transparent glycerine soap is the following:

	Parts by Weight
Tallow	100
Coconut oil	100
Castor oil	80
Caustic soda, 38°Be.	141
Glycerine	25
Sugar, dissolved in	80
Water	80
Alcohol	50

The tallow and coconut oil are melted together and the castor oil mixed in just before saponification. The caustic soda solution is mixed with the alcohol and added to the fat charge which should be at about 75°C. After about half an hour the glycerine is added and then the warm sugar solution, with thorough stirring. The kettle is covered again and allowed to stand for about 30 minutes. Color and perfume are added with the temperature of the molten mass at about 60°C. J. Davidsohn. *Soap, Perfumery and Cosmetics* **13,** 186-8, 190, 196 (1940).

Weighing Tube for Moisture Tests

By R. B. Trusler and L. E. Weeks
Davies-Young Soap Co.

IT is customary practice to weigh ten grams of soap directly into a 500 ml. flask, when the moisture content is to be determined by the distillation method. This is true of the usual manner of making this determination by Church and Wilson (1) adaptation of Dean and Stark's (2) method for measuring the amount of water in soap, and also of Trusler's (3) proposed use of barium chloride for modifying the same method.

In most cases, an ordinary laboratory scale is employed for obtaining the tare of the distilling flask, to which is then added ten grams of soap. At the best, the accuracy of this weighing is ±0.1 gram, and if liquid soap is being analyzed, the weighing is still more inaccurate because of evaporation losses. Since accurately calibrated burets, especially the narrow bore, 5 ml. moisture traps, permit readings with exactness of ±0.01 mls., this test warrants more careful weighing of the sample. The large distilling flask might be suspended from the arm of an analytical balance, but this is awkward and not good for the instrument.

Laboratory experience has shown that a weighing bottle is a satisfactory means for obtaining this accuracy in conjunction with an analytical balance. A suitable bottle is easily prepared from a test tube or from a small vial (diameter about 15 mm., length of about 35 mm., and capacity of about 8 ml.). A long, narrow tube such as this reduces evaporation losses during handling so that variations rarely exceed ±0.01 gram in weighing out a 5-gram sample.

A weighing tube makes possible other improvements in technique. The use of a smaller sample shortens the time required for the test to approximately one hour of total running. Furthermore, the reduced sample permits much smoother distillation in the presence of anhydrous sodium acetate (A.O.C.S. method) (1), thus accomplishing the same benefit as doubling the size of the distilling flask and volume of toluene or other liquid while keeping the sample large (10 grams).

It has been found that the contents of the weighing bottle are readily dissolved out by the boiling liquid and that the small bottle is kept in a constant bobbing motion during distillation. This movement proves very effective in keeping the contents of the flask from sticking and burning on the bottom. Although any type of soap can be weighed in this manner, it is most convenient for liquid soaps, water emulsions of waxes, etc.

References

(1) Church and Wilson, *Soap*, 7, No. 11, 3507 (1931).
(2) Dean and Stark, *J. Ind. Eng. Chem.*, 12, 486-490 (1920).
(3) Trusler, R. B., *Oil and Soap*, Vol. XVI, No. 12, 239-241 (1939).

Bleaching Clays

In a study of the decolorizing efficiency of clays activated by means of sulfuric acid, it was found that activation attained a maximum after the clay had been digested for 6 hours in a reflux apparatus with sulfuric acid of 20 per cent concentration. Treatment with lower or higher strengths of acid for longer or shorter periods resulted in inferior products. The clay was gray in color, had a rather greasy feel and readily absorbed water.

Analysis after removal of sand by sedimentation gave the following percentage composition: Water 3.15, alumina plus iron oxide 30.5, silica 54.2, magnesia 0.9, loss on ignition 12. The air-dried sand-free clay was softened in an equal amount of water for 24 hours before being digested with sulfuric acid. After digestion the clay was transferred to cold water, decanted and washed on a filter until the wash water was free from sulfate ion. The clay was air-dried for 1-2 days, then dried in an oven to constant weight. The superiority of clay treated in this manner was demonstrated in decolorizing tests on a series of vegetable and mineral oils. *Chem. Age* **42,** 198 (1940).

Analysical Suggestions

In a very simple method for the determination of oil in seeds, the seeds are ground up with clean sand and the material extracted with a measured amount of benzine. A few cc. aliquot of the extract are allowed to evaporate by dropping onto a filter. From the differences between the weight of the filter plus oil and the tare the amount of extracted oil can be calculated.

An improvement in the Hübl method for iodine number determination is the use of benzol instead of chloroform as solvent, and mercury acetate in aqueous solution instead of mercury chloride in alcoholic solution. The method is simpler with these changes. F. Wittka. *Seifensieder-Ztg.* **67,** 91-2 (1940).

Soap Curd Phase

It has been shown that several phases are possible in the formation of soap. The special properties of the soap-curd phase may be attributed to a state in which varying amounts of water and salt are bound up. The amounts change markedly with temperature, so that the values are different at room temperature and at 90°C. It has been suggested that hydrates are present in the soap-curd phase in which the water is bound in stoichiometric proportions. Steam-pressure methods have shown that this is not the case since at 90° the soap curd is in a single phase of variable composition. *Allgemeine Oel— und Fett-Ztg.* **37,** 42-6 (1940).

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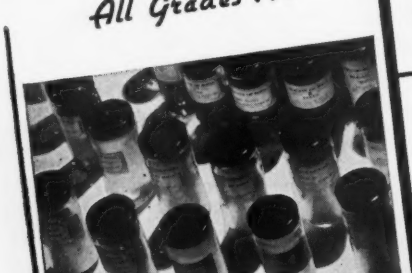

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Products and Processes

Semiboiled Soap

Any oil stock can be used in making semiboiled soap. When the emulsion has sufficiently thickened and all of the caustic lye is in, roisin which has been melted separately and the remainder of the oil stock are added, when the mass thickens to a semisolid state. Crutching is stopped and the pan is covered and kept hot for 1-2 hours. Heat is regulated so that the mass does not reach the boiling temperature. After some time the soap appears as a transparent golden mass resembling a settled soap, when it is ready to be framed. J. S. Shukla. *Indian Soap J.* **6,** 202-4 (1939).

Carpet Cleaner

A cleaning composition said to be harmless to fabrics and recommended for use where soap or wet cleaning may be injurious, has been announced by the Bigelow-Sanford Carpet Co., New York City. The product is called "Dri-Sor-bene" and consists of an absorbent base combined with a volatile solvent. It is expected to be used by cleaners, institutions, and carpet and upholstery manufacturers. The cleaner, which is in the form of a moist powder, is sprinkled on, brushed in, scrubbed without water, allowed to dry, then vacuumed or beaten out. *Textile World* **90,** No. 4, 82 (1940).

Salts of Sulfamic Acid

Salts of sulfamic acid have wetting power and other properties useful in the soap industry. The presence of sodium sulfamate will prevent the appearance of turbidity in liquid soaps. It also prevents the formation of calcium soap in hard water since calcium sulfamate is soluble. Sodium sulfamate has been recommended as an aid in the laundry. For the washing of wool blankets in water of 12° hardness, it was found that 140 grams of soap per 100 liters of water should be used together with 46 grams of sodium sesquicarbonate and 15 grams of sodium sulfamate. No contamination with calcium soap occurs and the blankets have a soft feel. By the reaction of oleyl amide with chlorosulfonic acid a sulfamate is obtained which is analogous in chemical composition to Igepon T. G.C. *La Revue des Produits Chimiques* **43,** 82 (1940).

Leather Cleaner

A formula for a good leather cleaner is the following:

	Parts
Milled soap	6
Water	100
Ammonia, 26° Be.	6
Glycerine	14
Ethylene dichloride	7

The soap is dissolved in the water by warming and allowed to cool when the last three ingredients are stirred in. *Textile Colorist* **62,** 349 (1940).

Sulfonium Sulfate

Capillary-active sulfonium sulfates are made by causing sulfuric acid of 96-100 per cent concentration to react with a primary aliphatic thioether containing less than 10 carbon atoms, and a saturated primary aliphatic alcohol containing more than 5 carbon atoms. The sulfonium sulfate is recovered from the reaction mixture. Shell Development Co. Canadian Patent No. 388,120.

Organic Sulfonates

Organic sulfonates of a particular cation are converted to sulfonates of a different cation by dissolving the sulfonates to be converted in a mixture of water and an organic solvent. This solution is treated with a concentrated aqueous solution of a salt containing the desired cation. The liquid phases so formed are separated and the converted sulfonate is recovered from the aqueous-organic solvent phase, the mixture of water and organic solvent having the property of dissolving both the original and the converted sulfonate and causing the formation of immiscible liquid phases. The organic solvent may be selected from the group consisting of ethanol, propanol, isopropanol, normal-butanol, tertiary butanol, acetone, ethylene glycol monoethyl ether, etc. Colgate-Palmolive-Peet Co. Canadian Patent No. 388,205.

Palm Oil Soap

Palm oil produces a crumbly soap which cannot be milled readily but when mixed with tallow and coconut oil, or with 20-25 per cent of coconut oil, a satisfactory toilet soap is produced. During the saponification of palm oil it is not advisable to blend it with tallow in the kettle as the two do not readily mix. Soaps made from palm oil by saponification with caustic soda vary in color from dark yellow to light buff, depending on whether the oil is bleached or not. Palm oil is easily saponified. These soaps are very hard, produce a fairly slow, close lather, have good cleansing properties and are mild on the skin.

Unless it is desired to convey the orange color of the oil to the finished soap, the oil must be bleached before saponification. The methods generally employed depend on oxidation with bichromate in acid solution, or on direct bleaching by blowing with air under suitable conditions. *Textile Colorist* **62,** 349 (1940).

Emulsifying Efficiency

By comparing a sample emulsion with a standard in a colorimeter converted into a turbidimeter, the efficiency of any emulsion can be determined. The turbidimetric measurements permit study of the mechanism of emulsification, as well as the effect of temperature, pressure, emulsifying agent, and similar variables. Quantitative results can be obtained fairly quickly. Leonard H. Cohan and Norman Hackerman. *Ind. Eng. Chem., Anal. Ed.* **12,** 210-13 (1940).

New Patents

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Complete copies of any patents or trade-mark registration reported below may be obtained by sending 25c for each copy desired to Lancaster, Allwine and Rommel. Any inquiries relating to Patent or Trade-Mark Law will also be freely answered by these attorneys.

No. 2,195,399, Floating Milled Soap, patented April 2, 1940 by Thomas S. Eagen, Cincinnati, Ohio, assigner to The Procter & Gamble Company, Ivorydale, Ohio. The process of forming a bar of milled toilet soap having floating properties, which comprises forcibly inserting displacing means only part way through a blank, unperforated bar of the soap and simultaneously stamping same, thereby giving the soap bar substantially its final form with a cavity extending inward from only one face of the bar, withdrawing the displacing means and with stamping dies in stamping position to prevent deformation of the bar, stamping the face of the bar containing the opening of the cavity thereby closing the opening and forming within the bar a hollow space of sufficient size to reduce the apparent specific gravity of the bar to less than that of water.

No. 2,195,418, Wetting, Washing, Dispersing, and Penetrating Agents, patented April 2, 1940 by Ernst Alfred Mauersberger, Maarssen, Netherlands, assignor, by mesne assignments, to American Hyalsol Corporation, Wilmington, Del. A method of producing wetting, washing, dispersing and penetrating agents with aliphatic alcohols containing no less than eleven carbon atoms in the molecule, which method comprises the steps of esterifying the alcohol with boric acid, chlorinating the esterified alcohol by reacting the same with chlorine, thereby replacing at least one hydrogen atom in the chain by a chlorine atom without impairing the boric acid radical, and energetically stirring the resulting product for about 6 to 12 hours at a temperature of about 50° to 65°C. with an excess of an anhydrous sulfonating agent whereby at least one of the substituted chlorine atoms and the boric acid radical are replaced by sulphuric acid ester groups.

No. 2,195,512, Detergent, patented April 2, 1940 by Emil E. Dreger, Summit, N. J., and John Ross, New York, N. Y., assignors to Colgate-Palmolive-Peet Company, Jersey City, N. J. A process for preparing a material suitable for use as a detergent that comprises reacting a material of the class consisting of fatty oils and fatty acids with a polyhydric alcohol, a sulphonating agent, and an aromatic compound of the class consisting of compounds of the benzene, naphthalene and anthracene series, and thereafter neutralizing the reaction product by bringing the concentrated reaction product into confluence with a relatively concentrated solution of a neutralizing agent in the presence of a considerable quantity of already substantially neutralized material.

No. 2,195,581, Detergent, patented April 2, 1940 by John Ross, N. Y., N. Y., assignor to Colgate-Palmolive-Peet Company, Jersey City, N. J. A process for producing alkyl hydroxy sulphonates which comprises treating a halogen substituted olefine with a strong acidic sulphonating agent, diluting with water, boiling the dilute water solution and treating with strong alkali to yield a polyhydroxy alkyl sulphonate.

No. 2,195,696, Insecticidal Composition, patented April 2, 1940 by Clarence D. Dolman, Chelan County, Wash., assignor to Hercules Glue Company. A spray composition comprising about 100 gallons of water containing (1) from about one-half to about four pounds of a material selected from the group consisting of a fatty acid ester and a fatty acid soap and an oil having a viscosity from slightly under that of kerosene to about 95 Saybolt, the fatty acid content totalling from about 5 to 30% of the oil, the material having a free fatty acid content of from ½% to 20%, and (2) a substantially water insoluble finely divided solid insecticide suspended in the water in an insecticidally effective concentration.

No. 2,195,713, Brushless Shaving Cream, patented April 2, 1940 by Wolf Kritchevsky, Chicago, Ill., assignor to Rit Products Corporation, Chicago, Ill. A brushless shaving cream comprising a plastic emulsion of oleaginous material and water, and having included therein a proportion of a chemical compound having oleophillic and hydrophillic groups in the molecule and having the general formula

$$(R—CO—O)_n—X$$

wherein R is a hydrocarbon radical with at least seven carbon atoms, its hydroxy and sulphonic substitution products, and sulphuric and phosphoric acid esters; n is an integer and stands for one, two or three, and X is hydrogen, an alkyl, alkylol, or alkylene group, the oxy, hydroxy, and sulphonic acid substitution products and their sulphuric and phosphoric acid esters, the compound as a whole having at least one inorganic oxygenated acid radical, the ingredients above-mentioned being present in substantially the following proportions:

Oleaginous material	About 5% to about 30%
Water	About 50% to about 80%
Chemical compound	About ½% to about 10%

No. 2,196,763, Liquid Antiseptic Soap, patented April 9, 1940 by Louis J. Figg, Jr., Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N. Y. A liquid, antiseptic toilet soap comprising soap, water, from 0.5% to 33%, by volume, of hardwood oil whose boiling range is between 180°C. and 240°C., and a blending agent for the soap and the hardwood oil.

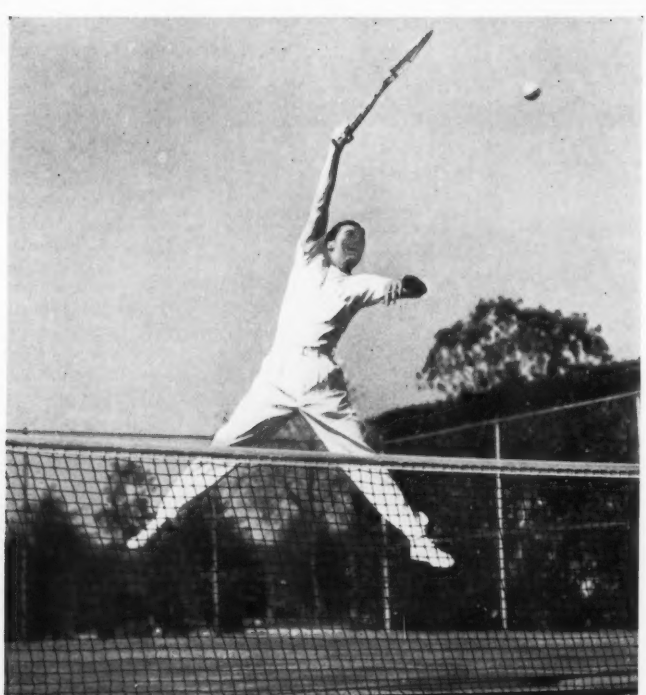
No. 2,197,249, Insecticide, patented April 16, 1940 by Houston V. Claborn and Lloyd E. Smith, Washington D. C., assignors to Henry A. Wallace, as Secretary of Agriculture of the United States of America, and his successors in office. An insecticide containing as its essential active ingredient 9-fluorenol.

No. 2,197,500, Insecticidal Composition patented April 16, 1940 by George L. Hockenyos, Springfield, Ill., assignor to Monsanto Chemical Company, St. Louis, Mo. A dry insecticidal composition which is readily dispersible in water to form a stable dispersion, comprising an organic insecticide of the rotenone and pyrethrum class and a water soluble salt of a hydroxy substituted aromatic sulphonic acid which is soluble in acetone, the product being produced by dissolving a mixture of the insecticide and dispersing agent in acetone and evaporating the solution to dryness.

No. 2,197,624, Insecticide and Insect Repellent, patented April 16, 1940 by Wm. P. ter Horst, Packanack Lake, and Robert W. Eldridge, Nutley, N. J., assignors to United States Rubber Company, N. Y., N. Y. As an insecticide or insect repellent, a preparation containing as an active ingredient, a compound having the formula

$$\begin{array}{l} NH \\ \| \\ C—S\ O_nX \\ | \\ NH_2 \end{array}$$

where n is 2 or 3, and X is hydrogen or metal.



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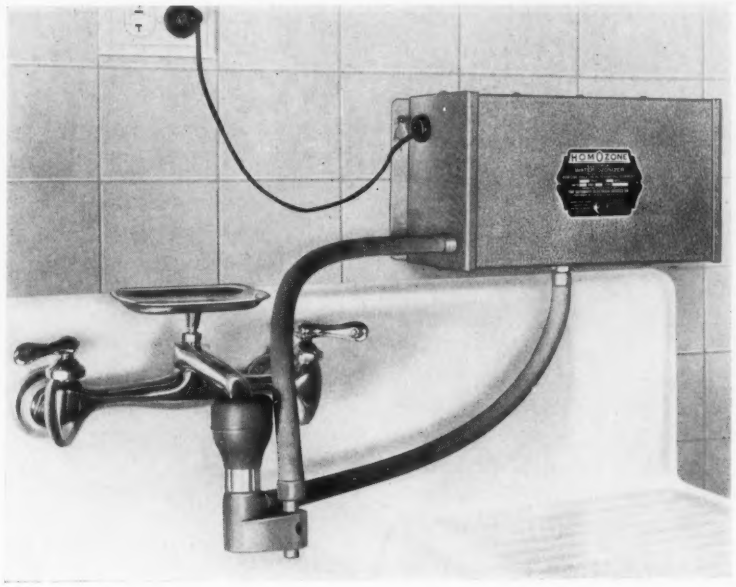
New Equipment

IF YOU want additional information on any of the items described below or if you want any of the bulletins, catalogs, etc., write to the MacNair-Dorland Co., Inc., 254 West 31st St., New York, mentioning the number of the item.

703—Water Ozonizer

Automatic Electrical Devices Co., Cincinnati, has recently placed on the market an electrical water ozonizer which, the manufacturers



say, sterilizes water by destroying certain bacteria and eliminates objectionable tastes and odors. The device can be connected to any water faucet.

704—Soap Dispensers

A complete line of soap dispensers for liquid and powder soaps is described in a folder just issued by Ampion Corp., Long Island City, N. Y. Gravity type, pump down type and tilt type dispensers of glass and non-corrosive metal are illustrated and prices given.

705—New Packaging Machine

Triangle Package Machinery Co., Chicago, has announced the "Junior Elec-Tri-Pak," a new addition to its line of "Elec-Tri-Pak" weighers. The machine is designed specifically for firms having a wide variety of products to pack. Weight of each package is automatically controlled by a balance beam and a mercury switch. It is a one operator machine.

706—Portable Sprayer

Fumeral Company, Racine, Wisc., has developed an inexpensive, portable sprayer, "Fumeral model No. 7HS" for the spraying of sodium hypochlorite solutions for meat-packing and sausage plants. It has a half gallon capacity and can be operated by either steam or air pressure. Units are made of a material resistant to the corrosive properties of sodium hypochlorite.

707—Petroleum Sulfonates

L. Sonneborn Sons, Inc., New York, manufacturers of petroleum products, have issued a 5-page bulletin describing the use of refined petroleum sulfonates and soluble oil bases prepared from them in the manufacture of soluble cutting oils, emulsion polishes, etc. Additional uses in the manufacture of fatty acids, fungicides, rust preventives and related products are suggested.

708—Essential Oils

Dodge & Olcott Co., New York, has issued a new wholesale price list of essential oils, fixatives, aromatic chemicals, perfume bases, imitation flavors, insecticide materials, certified colors and specialties for the soap and insecticide industries.

709—Bottlers Catalog

U. S. Bottlers Machinery Co., Chicago, are distributing copies of their new catalog, the Bottling Engineer Handbook. This 200-page book, in addition to illustrating and describing their complete line of equipment for processing and packaging liquids and semi-liquids, contains many helpful tips for superintendents and production men. Copies may be obtained by writing the company or the publishers of *Soap and Sanitary Chemicals*.

Moves to New Quarters

The New York office of Naugatuck Aromatics, Division of United States Rubber Co., was moved to 12 East 22nd Street, on May 6.

Henry Barroll & Co. Moves

Henry Barroll & Co., manufacturers of caps, closures and pouring nozzles, formerly at 270 Broadway, New York, have moved to new quarters at 100 E. 42nd Street.

Powdered Hand Soap

(*From Page* 26)

materials, and corn meal. The latter because of its granular structure appears to form a soap product which has several advantages. It is cheap, it gives a soap which is free flowing and works well in dispensers, and it has a fair abrasive action without the cutting effect of sand and some other mineral abrasives.

To answer the complaint that steady use of hand soaps containing insoluble, heavy abrasives will clog up drains, some products are available containing bentonite and other clays, also talc and the like. These of course have very little abrasive

action and will not dig into a layer of heavy grime in the fashion of a regular abrasive soap. All of which brings out the question of speed and completeness of the hand cleaning job. Where hands are very dirty with deeply imbedded grime, it is obvious that the milder soaps, powders or pastes, will remove only the surface dirt which can be softened and floated away by the lather. Imbedded grime, it is held by several soap manufacturers, can only be removed in a single hand washing operation, and quickly, by the surface scraping action of an abrasive whose harshness is proportional to the depth of the grime deposits. Soft action of a non-abrasive soap cannot take the place of the strong scrubbing needed for heavy-duty hand cleaning, unless that action is accompanied by the use of a stiff hand brush,—which acts as an abrasive,—and preceded by long soaking in warm water. Dermatitis or no dermatitis, they maintain, a rough, fast hand cleaning job requires a strongly abrasive product, and this is what the mechanics want and what they give them.

So, out of this hand soap controversy, there come arguments on all sides. But the fact remains that powdered and granular soaps appear to be gaining ground over other forms for hand washing in factories.

One feature of the industrial hand soap market which appears to be attracting more attention of late, but nevertheless has not been developed to the extent which it might be, is the possibility of protective creams. These creams which might be sold in connection with hand cleaners and which fit in with the general trend of hand protection and the prevention of dermatoses in industry, are applied by workmen *before* they start on the job. They are supposed to form a protective layer on the hands, preventing corrosive substances and grime from working into the skin. They are washed off easily and re-applied at the beginning of each work period. They reduce the harshness of the washing action necessary to clean the hands. At the same time, workmen do not show any great desire to use them, as far as can be determined.

These protective creams are of several types. One common composition is as follows: Lanolin, 20 parts by weight; white chip soap, 8 parts; glycerine, 2 parts; petrolatum, 3 parts; zinc oxide, 2 parts; water, 65 parts. Perfume with eucalyptus, and a "carbolic" type odor. Another product of the same type is composed of: petrolatum, 13 parts; glycerine, 5 parts; talc, 12 parts; potash soft soap, 40 per cent, 10 parts; water, 60 parts.

Silicated Soaps

(*From Page* 30)

percentage composition of the silicate used, since there are various compositions. Neither is it possible to make an accurate determination of free alkali in soap containing silicate of soda as the various methods are open to serious question.

Mention of laundry flakes for commercial laundry work might be made by saying that they contain a very small percentage of silicate of soda, only enough to hold moisture and prevent rapid drying out. These comparatively low percentages of silicate are sufficient, as commercial users of soap are in a position to buy their own softeners and builders and to make up solutions in proportions found most suitable for their use.

The packaging of silicated soaps does not present any particularly difficult problems. Flake soaps are run directly from the dryer to the packaging machine. Bar soaps should be wrapped immediately, as they contain high percentages of volatile matter. The inner and outside wrappers should be made of heavily paraffined paper and preferably sealed by heat.

Only passing mention of beaded and puffed soaps will be made here as these are the products of large manufacturers who own the various patents, and are not a problem of the smaller firms. It is sufficient to say that these soaps are made to hold extremely large percentages of builders or fillers and low soap content.

Silicate of soda has been mentioned as a desirable ingredient, in small quantities, in shaving creams to prevent the soap attacking the metal tubes. Silicates have been mentioned also as a part of the formula for transparent soaps, but the manufacturer usually will avoid such formulae, as they are difficult enough to make without the addition of insolubles.

Soap Phases

(*From Page* 34)

which occurs at a slightly higher temperature the longer the hydrocarbon chain. For example, sodium palmitate melts from waxy to superwaxy soap at 172°C. while sodium behenate undergoes the same transition at 158°C.

Mixtures of Anhydrous Single Soaps

So far only mixtures of pairs of single soaps have been at all carefully studied. In all cases the behavior of the mixed soap was entirely analogous to that of the single soaps, a large number of phases being formed successively on heating or cooling.

In the isotropic solution, neat and subneat phases, all pairs of soaps studied were found to be completely miscible, even when the two components differ in chain length by six carbon atoms, with but one exception. In the subneat phase sodium oleate and sodium stearate are possibly not completely soluble in one another. The miscibility of the soap phases present at lower temperatures is less than that of the high temperature forms. In the superwaxy phase sodium palmitate and sodium stearate are completely miscible, $\triangle$ n being two ($\triangle$ n is the difference in the number of carbon atoms in the soap molecules), but when $\triangle$ n is four or more, incomplete solubility usually results, although either soap can incorporate a great deal of the other before a second phase is formed. With waxy and subwaxy phases incomplete solubility is generally the case when $\triangle$ n is equal to four. Fragmentary evidence indicates that where

a. Aqueous Sodium Oleate Superneat Soap at 220°C

b. Aqueous Sodium Oleate Soap-boiler's Neat Soap at 144°C.

c. Aqueous Sodium Oleate Middle Soap at 120° C.

d. Aqueous Sodium Oleate Middle Soap at 80°C.

Fig. 4. Photomicrographs of sodium oleate-water systems (175X; crossed Nicols).

both soaps are in the true crystalline curd fiber form, they may be nearly insoluble in one another.

The behavior of mixtures of sodium palmitate and sodium laurate affords an interesting example of these solubility relations. Curd fiber phase of sodium palmitate apparently can not incorporate more than 5 per cent[a] sodium laurate before the system breaks down to a heterogeneous mixture of two phases. Above 117°C., where the sodium palmitate is present as subwaxy soap, up to 21 per cent sodium laurate can be dissolved. At still higher temperatures, where waxy sodium palmitate is present, nearly any amount of sodium laurate, at least up to 76 per cent, can be dissolved before the soap becomes heterogeneous. All the phases of sodium palmitate present at still higher temperatures, i.e., superwaxy, subneat, neat and isotropic liquid, are completely miscible with sodium laurate.

It is quite possible, however, by analogy with the behavior of mixed fatty acids,[b] that in the case of a commercial mixture containing many individual soaps of all chain lengths, that the solubility of the various phases in each other may be considerably enhanced over the results found with simple binary mixtures.

The effect of additions of a second soap on the transition temperatures of the first soap are in accord with expectations of orthodox physical chemistry. Where the phases are completely miscible the transition temperature (or range) of the mixture is usually intermediate between those of the two single soaps of which it is composed. In these instances the melting point or transition temperature is nearly as sharp for the binary mixture as for a single soap.

Where addition of another soap eventually brings about formation of a second phase small additions of either soap to the other usually effect a lowering of the transition temperature, in which cases the transition usually occurs over a temperature range. Thus the temperature at which curd fiber phase of sodium palmitate melts to subwaxy soap is lowered from 117° to 107° C. by the presence of 12 per cent sodium laurate. This tendency is important since, in the case of more complicated mixtures, especially those containing laurate or oleate, it may result in shifting transition temperatures which occur at commercially uninterestingly high values for the single soaps down into the important range between room temperature and 100° C.

Mixtures of Soap and Water

It is not yet possible to construct a phase rule diagram showing exactly the behavior of the new soap phases in aqueous systems. Fig. 3, reprinted from the *Journal of Physical Chemistry*, is a preliminary sketch of the probable behavior of sodium oleate and water, but it is not supported by sufficiently definitive experimental evidence to serve as a working diagram or even necessarily to establish all the qualitative aspects. For instance, no information is available concerning the course of the phase boundaries at lower temperatures. In this diagram systems whose composition falls in the cross-ruled areas consist of and in some instances may separate into two different phases.

A similar diagram has been found for sodium stearate and water, although in this instance the data are even less complete and there is no evidence as to whether superneat and soap-boiler's neat soap are the same or different phases. The saturated soap differs from the unsaturated chiefly in the fact that all the transitions are shifted to higher tempera-

[a] All compositions are expressed in terms of weight per cent.
[b] E. Ott and D. A. Wilson, *Science*, *78* 16 (1933).

tures, and the heterogeneous region between soap-boiler's neat soap and middle soap or isotropic liquid does not occur over so wide a range of composition.

Fig. 3 postulates the existence of three phases in the aqueous system which may have no counterpart in the anhydrous soap. Two of these, *middle soap* and *soap-boiler's neat soap*, have been familiar for a number of years. The third, *superneat soap*, so called because it occurs above the field of soap-boiler's neat soap, was inferred from the newly discovered hump in the melting point curve to isotropic liquid. All three are liquid crystalline solution phases.

Middle soap is nearly transparent and so stiff that four gram samples sealed in glass tubes of 12 mm. diameter do not flow despite vigorous pounding. Soap-boiler's neat soap is rather turbid and translucent, tending to become more transparent on long standing. It appears to be less viscous than middle soap, judged by the ease with which it flows in a tube, and in the case of sodium oleate and water at 100° C. it is rather fluid, the fluidity decreasing as the soap concentration increases. Superneat soap is nearly indistinguishable in appearance from soap-boiler's neat soap, being perhaps somewhat clearer. The aqueous extensions of the anhydrous phases of the dry soap look very much the same as the phases of the dry soap and, with the exception of neat soap, are a great deal more opaque than the more aqueous phases.

Photomicrographs of these phases are shown in Fig. 4. Superneat, soap-boiler's neat and middle soap all differ from the anhydrous phases in having a decidedly coarser structure and much brighter polarization colors. The concentrated aqueous phases, subwaxy, waxy, etc. are nearly indistinguishable in microscopic appearance from their anhydrous analogues.

Since it was formerly believed that settled soap could be dehydrated continuously without undergoing any phase change to the anhydrous liquid crystalline phase first formed on cooling the anhydrous isotropic liquid, the name *neat soap*, the time-honored designation for the soap in the kettle, was also applied to the first phase formed on cooling the molten anhydrous soap. According to present indications, however, the two may not be the same phase. Hence it is proposed to call the kettle soap *soap-boiler's neat soap*, using the term *neat soap* for the high temperature liquid crystalline form present with anhydrous soap or very concentrated aqueous systems. Even if Fig. 3 is not entirely correct, and even if it should prove possible to dehydrate soap-boiler's neat soap continuously to some anhydrous phase, it would still be desirable to maintain this distinction since the same phase may not always occur first on cooling the anhydrous isotropic liquid. Anhydrous sodium oleate, for example, forms subneat soap instead of neat soap, there being no phase directly comparable to the neat soap of the saturated soaps.

A number of significant conclusions can be inferred from the diagram of Fig. 3. Most important, perhaps, is the indication that the presence of about 10 per cent to 15 per cent water destroys the multitudinous anhydrous phases, resulting in the formation of one or two aqueous phases stable over wide intervals of temperature. Another noteworthy fact is that water lowers the transition temperatures of the anhydrous soaps markedly and rapidly. Hence a transition which occurs in an anhydrous soap at so high a temperature that it is of no practical interest may occur in the region of commercial interest when water is present.

With regard to possible use of similar diagrams for interpreting what happens on cooling soap-boiler's neat soap of commercial mixtures, it is significant that preliminary experiments with sodium oleate and water have shown that the presence of up to 1 per cent sodium chloride may alter the phase boundaries only slightly. In the case of sodium oleate it is also quite possible, as appears in Fig. 3, that the phase first formed on cooling soap-boiler's neat soap may sometimes be one of the waxy phases rather than curd fiber phase, the change being followed by transition to curd fiber phase only at somewhat lower temperatures.

The author wishes to express his appreciation to Dr. J. W. McBain for reading the manuscript of this paper.

Summary

Anhydrous sodium soaps undergo a large number of reversible phase transitions before melting to isotropic liquid. The phases present at successively higher temperatures have been named curd fiber phase, subwaxy, waxy, superwaxy, subneat, neat and isotropic liquid.

The behavior of mixtures of two pure anhydrous soaps is entirely similar to that found with the single individuals. The mutual solubility of the diffeernt phases is far less in the low temperature than in the high temperature forms.

Small amounts of water are incorporated in the phases of the anhydrous soap with resultant lowering of the transition temperature. Addition of larger amounts of water destroys the original phases and gives rise to new phases which may have no counterpart in the anhydrous soap.

All of these phases may be represented on phase rule diagrams, which are useful for describing and predicting the equilibrium state of soap systems under any conditions.

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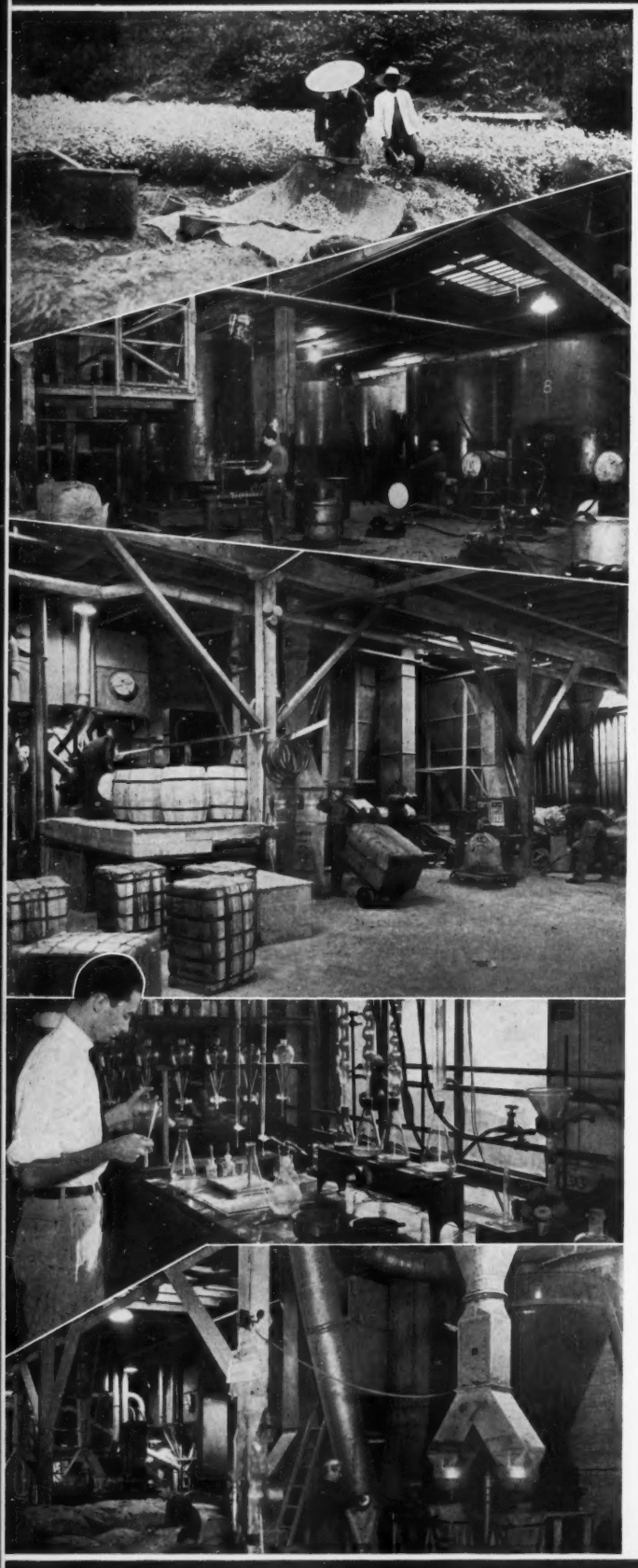

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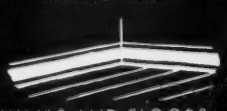
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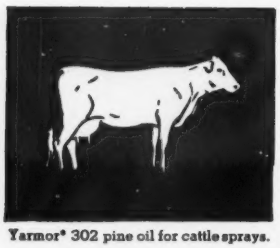

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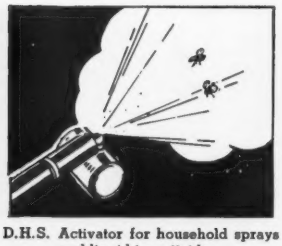

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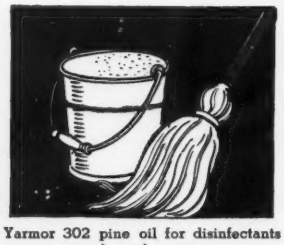

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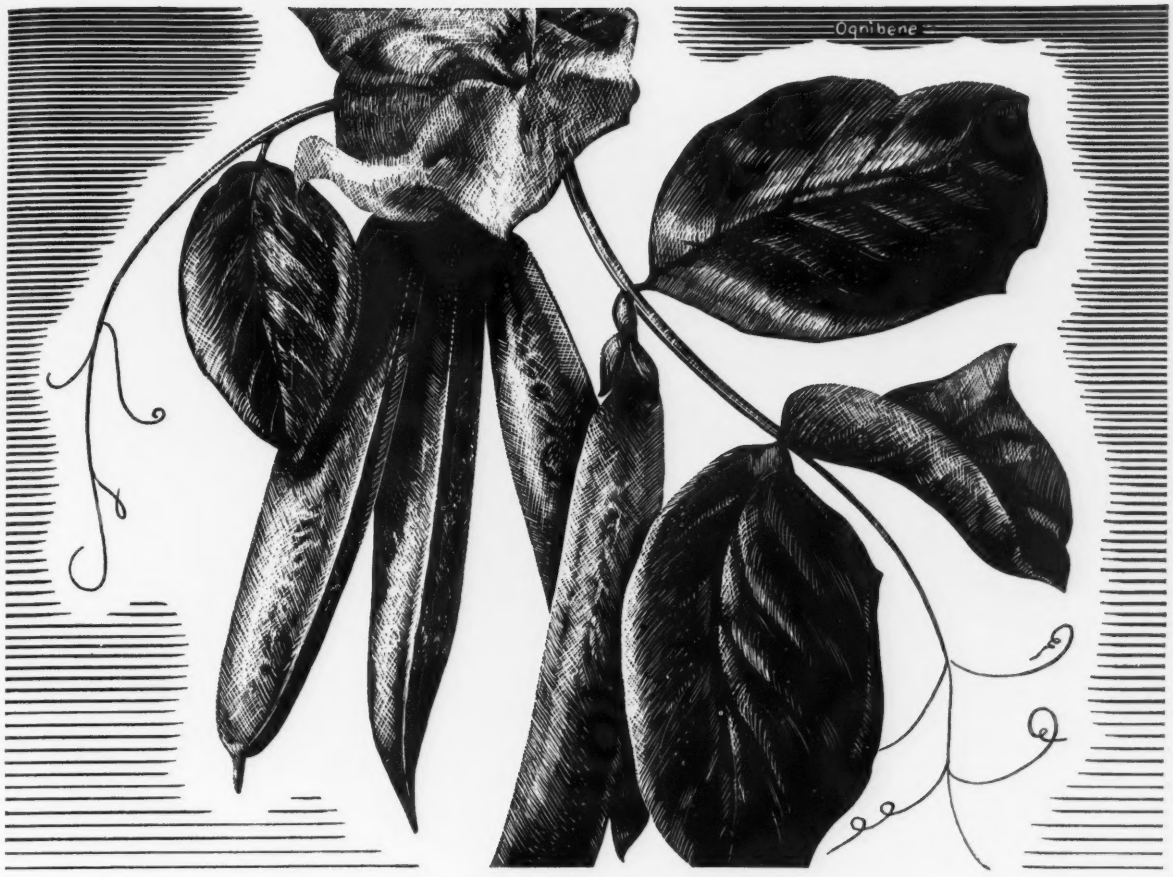

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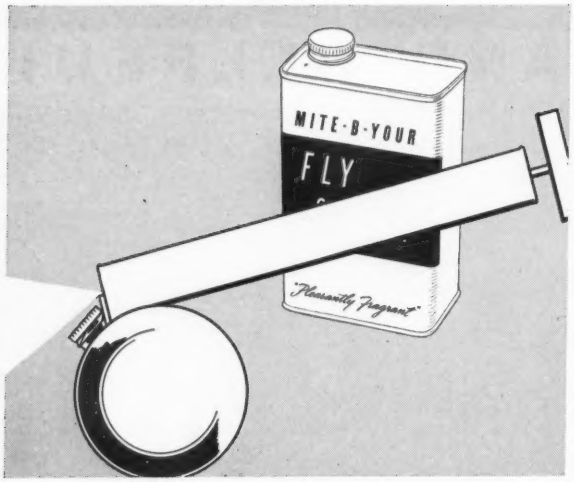

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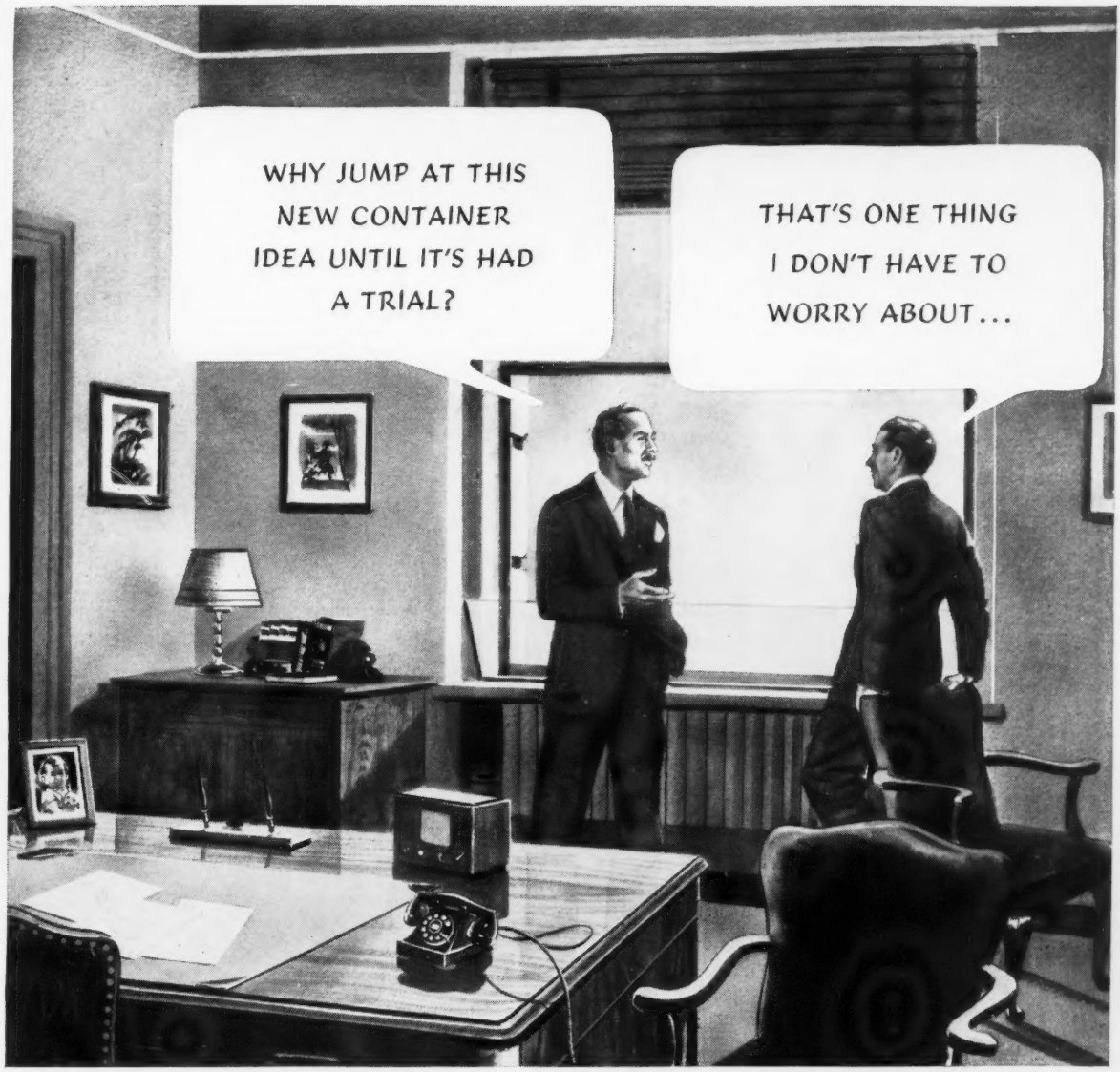

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Sanitary Products

A Section of SOAP

Official Publication, Nat'l. Assn. of Insecticide & Disinfectant Manufacturers

WITH the transfer of the Food & Drug Administration away from the Department of Agriculture, enforcement of the new Food, Drug & Cosmetic Act passes to the U. S. Public Health Service, a part of the Federal Security Administration. But enforcement of the Insecticide Act of 1910 remains with the Department of Agriculture. Just how this is going to work out in practice is, of course, not known as yet. It is to be hoped, however, that there will be no wide changes of personnel or shifting of enforcement into the hands of those unfamiliar with the law, its background, and the industry which it regulates. The Insecticide Act has been strictly and effectively enforced for many years, and we do not believe that honest manufacturers want to see this changed even though they may at times disagree sharply with enforcement decisions.

IF the consumption of floor waxes in the United States continues on the same level which has been established over the past several years, the chances are that carnauba wax will never return to the comparatively low prices at which it used to sell. Although more carnauba wax than ever has been produced during the past year, demand has increased even more rapidly and prices have risen steadily. It seems to be the opinion of those who should know that wax polish manufacturers must adjust their ideas of cost to the current carnauba market. At least for another six months, they state, any material decline in the price is unlikely. From this we may judge that carnauba will continue to be a thorn in the side of floor wax producers for some time to come.

AS A RULE, good newspapers are hesitant about publishing ballyhoo for any product in their news pages. In fact, it is safe to say that self-respecting newspapers never do this and are meticulous in avoiding anything resembling a "reading notice," which is publishers' parlor language for a free write-up of a product which may or may not be advertised elsewhere in the paper. Nevertheless, not all newspapers are as conscious of their self-respect as they might be. With some, the need of ready cash places self-respect in the category of a luxury, and after all, editors and publishers must eat.

And thus we knew it was a milestone on the downward path when we read in the "news" pages of a once fine newspaper, under the heading of "Glistening Curls," the following: "Have you tried polishing your hair with a sponge shampoo. Soap of rich olive and almond oils is applied to the scalp with a small sponge . . . Each stroke of the sponge brings new gloss and gleam to the hair . . . "

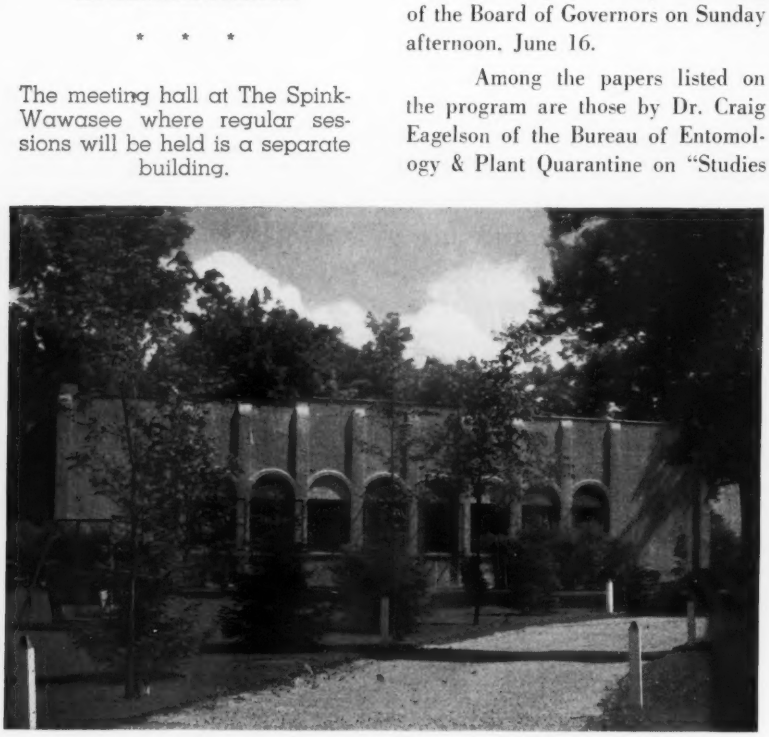
We always feel sorry for the editors who have to run this sort of tripe in their papers. It probably gripes them just as much as it does most of their readers. But, as before mentioned, even an editor must eat.

INSECTICIDE - DISINFECTANT MEETING, JUNE 17-19

W. J. ZICK, President
Stanco, Incorporated
. . . he will wield the gavel at the business sessions.

* * *

The meeting hall at The Spink-Wawasee where regular sessions will be held is a separate building.



FINAL plans for the 26th annual mid-year meeting of the National Association of Insecticide & Disinfectant Manufacturers to be held at The Spink-Wawasee, Lake Wawasee, Indiana, June 17 to 19, have been announced by N. J. Gothard of Sinclair Refining Co., chairman of the general convention committee. Business meetings will be held each morning during the three-day convention with afternoons given over to committee meetings and sports. The regular sessions will be preceded by a meeting of the Board of Governors on Sunday afternoon, June 16.

Among the papers listed on the program are those by Dr. Craig Eagelson of the Bureau of Entomology & Plant Quarantine on "Studies of Pyrethrin Content of Homemade Livestock Sprays," and "Bioassay of Livestock Sprays Using Hypnotic Doses in a Spray Tunnel"; W. W. Davies of United Airlines on "Sanitation and Fumigation in Air Transportation"; Dr. G. B. Ulvin of Sidney Wanzer & Sons Dairy on "Sanitation in Various Phases of Dairy Operation"; Dr. Alfred Weed of John Powell & Co., on "Studies on Deterioration of Pyrethrum"; Harry D. Garrett, Chief, Food and Drug Administration, Chicago, on "Cooperation between Enforcement Officials and Manufacturers."

N. J. GOTHARD
Sinclair Refining Co.
. . . he is chairman of the general convention committee.

Also on the program is a "Labeling Clinic" to be presided over by Dr. E. G. Thomssen of the J. R. Watkins Co. which will cover a gen-

A. A. BREUER
Breuer Electric Mfg. Co.
. . . chairman of the entertainment committee.

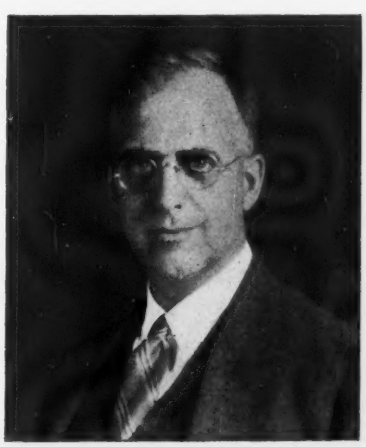
eral discussion of current labeling problems under the Insecticide Act and also the Food, Drug and Cosmetic Act. This will be in the form of an open question-and-answer discussion. Dr. Eric Kunz of Givaudan-Delawanna, Inc. and Henry C. Fuller, N.A.I.D.M. technical consultant will also act as discussion leaders. The detailed program subject to last-minute changes is given below.

The sports program will be in charge of Charles E. Furst of the Furst-McNess Co. The annual Association golf tournament will be held on Tuesday afternoon, June 18, in charge of A. L. van Ameringen of van Ameringen-Haebler, Inc. and Harold Meyer of S. B. Penick & Co. A special golf competition in charge of

D. W. LYNCH
John Powell & Co.
. . . his is the job of directing the affairs of the Registration Desk.

Dr. E. G. Thomssen for men over 6 ft. 1 and under 5 ft. 5, will be held at the same time for the now famous Brenn Trophy, the exact nature of which is a secret but which is suspected to be something handsome in the way of bedroom crockery. A baseball game between the "Peet-Grady

J. L. BRENN
Huntington Laboratories, Inc.
. . . a Hoosier in charge of hotel arrangements.



DR. E. G. THOMSSEN
J. R. Watkins Co.
. . . he will lead the discussion and preside at the "Labeling Clinic."

Bearcats" and the "Coefficient Cannoneers" will be held on Monday afternoon, June 17, in charge of H. R. King of R. J. Prentiss & Co. and Friar Thompson of Hercules Powder Co. The annual horse-shoe pitching championship will be handled by Wallace Thomas of Gulf Refining.

An informal beefsteak dinner

PRESTON B. HELLER
B. Heller & Co.
. . . he arranged the program of speakers and discussions.

with floor show will be held on Tuesday evening, June 18, at the hotel. Adam A. Breuer of the Breuer Electric Manufacturing Co. is chairman of the entertainment committee, assisted by Henry Brownstein of Hysan Products and T. B. Tribble of Magnus, Mabee & Reynard, Inc.

PROGRAM
Monday—June 17, 1940

9:00 A.M.—Registration.
Address by President W. J. Zick, Stanco, Inc.
Reports of—
Insecticide Scientific Committee: A. E. Badertscher, McCormick & Co.
"Moth Proofing Investigation"—F. W. Fletcher, Dow Chemical Co.
"Some Studies on Deterioration of

(*Turn to Page* 139)

J. B. MAGNUS
Magnus, Mabee & Reynard, Inc.
. . . he is in charge of transportation arrangements.

A Brief History of HOUSEHOLD INSECT SPRAYS

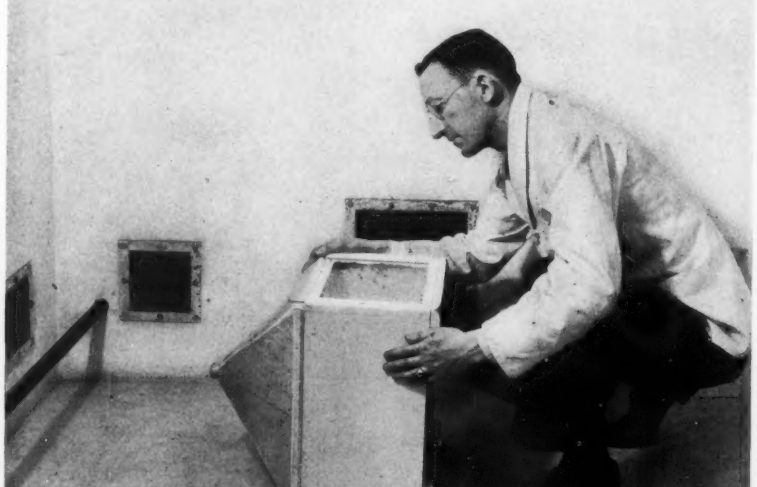
By Ira P. Mac Nair

LIQUID household insecticides of the fly-spray type have been on the market for less than twenty-five years. In the general field of insecticides, they are quite distinctly among the new-comers whose principal commercial development has taken place since 1920. The first kerosene extract of pyrethrum flowers sold as a household insecticide was "Walker's Devilment," developed by a patent medicine manufacturer of that name located at Thomasville Ga, and sold there first in 1916. In the same year, "Shepherd's Housefly Driver and Insect Exterminator" was brought out in Wilmington, N. C. by the Shepherd Chemical Co. This product was a pine oil extract of pyrethrum, offered also as a disinfectant. In 1917, "Komo" was put on the market in Philadelphia by the Komo Chemical Co. It was essentially the same as "Walker's Devilment" being a kerosene extract of pyrethrum, as were "Flyosan," made in Darby, Penna. in 1919 and "Fly Flu," first sold in that year at Ocilla, Ga. From these beginnings, in less than a quarter-century, has grown an American household insecticide-industry comprising close to two thousand brands with an estimated volume of twenty million yearly.

As in the case of most new product developments, the early fly sprays were a far cry from the present modern liquid insecticides. The first products were manufactured merely by agitating fine pyrethrum powder, or in some cases whole flowers, in a drum of ordinary kerosene. To fifty gallons of kerosene were added fifty pounds of pyrethrum, more or less. This was stirred in well and allowed to remain in contact with the oil for about a day or two with occasional stirring. The pyrethrum was then allowed to settle and the clear liquid,—which was not always so clear,—was decanted off, put in cans and sold. In the beginning, the odor of the kerosene, often very rank, was not masked, but soon the addition of methyl salicylate, mirbane, citronella, pine oil and the like were used to cover the kerosene odor.

In spite of the inefficiency of this type of extraction, these liquids were found to be quite effective against flies and mosquitoes when sprayed. Their advantage lay in the fact that they killed the insects and were not poisonous. Even though they did leave behind a strong odor of kerosene, they had obvious advantages over the only liquids then in use against household insects, the old-fashioned bedbug liquids. These latter were as a rule poisonous or left a very powerful odor behind, the common bedbug liquid in those days being a four or five per cent solution of cresylic acid in kerosene. Some bedbug liquids contained mercury bichloride and still other poisons. Viewed in contrast to the dangers of these poisonous liquids and the obvious disadvantages of powders in application, the rise of the non-poisonous pyrethrum sprays was not surprising.

A. G. Grady, co-author with the late Dr. Charles Peet of the Peet-Grady Method, liberates flies in a Peet-Grady Chamber.



PRECEDING by more than a century the development of the household insect spray was the use of pyrethrum powder as an insecticide. Probably prior to 1800, pyrethrum powder was recognized as an insect killer and used in southeast Europe where its nature and origin

Advertisement published in Wilmington, N. C. in May, 1916, for a liquid fly spray. Note the testimonials from Health and Department of Agriculture officials. Photo courtesy G. R. Rinke.

were kept a secret. Some time between 1820 and 1825, the material began to be shipped to western Europe from Caucasia and Dalmatia,—now Jugoslavia. Trieste was the shipping point. Its early demand was probably to control mostly fleas, body lice, and bedbugs if the living habits of the people of both western and southeastern Europe in the early nineteenth century may form the basis for a guess. It is unlikely that the esthetic angles of insect control were a factor in those days, and the chief demand for an insecticide was probably to insure above all bodily comfort. At any rate, the demand for this mysterious powder which killed insects but which was harmless to man and animals, grew rapidly. In fact, it is claimed by some authorities that even before 1820, Russia was using over 200,000 pounds of insect powder annually.

The history of the early uses of pyrethrum flowers against insects is quite cloudy in many respects. Mention is made of "Persian insect powder" which up until a few years ago was still an article of commerce. This "Persian" powder was supposedly manufactured from the dried flowers of the *Pyrethrum roseum*, a material now considered of little or no insecticidal value. If this product has been determined to be of no use in insect control today, how could it have been used effectively a century ago? Possibly the term might have referred to a mixture of *Pyrethrum roseum* and *Pyrethrum carneum*, the former giving it the characteristic purple color, or there might knowingly or unknowingly have been some proportion of *Pyrethrum cinerariaefolium* present in the powder. The latter is, of course, the standard pyrethrum of present-day commerce. Although the *cinerariaefolium* was supposedly not mentioned as such until after 1850, there is the possibility that it might have been grown and harvested along with the *roseum* 50 years before. Owing to the mystery and secret nature of the early days of insect powder, any true explanation might be difficult to find.

In 1855, pyrethrum flowers, or insect flowers as they were more commonly called, (also called "Trieste flowers" by some American importers) were first imported into the United States. They came from Dalmatia which by then had become established as the main producing center of the world, which position it held until 1914 when the outbreak of the World War dealt the industry there a blow from which it has never fully recovered. Beginning in 1914, Japan became the world's leading pyrethrum supplier and still holds that position today, although Dalmatia has made some effort to stage a comeback, and Kenya Colony in Africa has become a producer of high grade flowers during recent years.

Although Japan did not dominate the world market for pyrethrum until 1914, the growing of the flowers in that country dates back to 1884 when seeds from Dalmatia were first planted in Wakayama Prefecture. Today the Hokkaido district accounts for 65 per cent of Japan's crop. Behind the successful commercial growth of pyrethrum in Japan has been cheap labor, as the harvesting of the crop is essentially a hand opera-

tion in spite of certain machines developed for the purpose. Numerous attempts to grow pyrethrum in the United States have been successful experimentally, but thus far of little commercial moment. Of the total Japanese crop, about one-third has been consumed at home up until the past year or two,—the Chinese war has boosted home consumption,—and of the balance, the United States has taken over 90 per cent. The latter figure in pounds has varied since 1920 all the way between 3,000,000 and 16,000,000, as compared with a total Japanese production over the same period of 3,700,000 low and 28,500,000 pounds high.

Of the twelve to fifteen million pounds of pyrethrum taken yearly by American manufacturers, probably 80 per cent goes into the manufacture of the liquid spray type insecticide, mostly of the household variety. Whereas powdered pyrethrum was the main outlet for this material twenty years ago, the use of powder has not kept pace with the growth in demand for liquid sprays. In roach and ant powders, both alone and in combination with other materials, insect powder still finds considerable use, but it is safe to say that as far as the chief demand is concerned, liquids have stolen the market.

THE present modern liquid insecticide has really been a commercial development of the past ten years. It was not until 1924 that Staudinger and Ruzicka published their work on the isolation of the active principles of pyrethrum flowers. They had done most of this research ten years before, but their findings were not given out until the year mentioned. They discovered that the insecticidal power of pyrethrum was due to two esters which they designated as Pyrethrin I and Pyrethrin II. These are present in the flowers in approximately equal parts, (Commercial flowers range from 0.5 per cent up to 1.5 per cent total pyrethrins, the latter Kenya flowers. Trade F.A.Q., fair average quality, is generally taken to be 0.9 per cent) and are extracted by petroleum and other solvents. Based on this work of these two well-known European chemists, and the subsequent work of several American, French, and English chemists, the greatest developments in the modern fly spray have taken place since 1930.

Behind the fly spray of today stand (1) improved extraction of the active principles of pyrethrum and the manufacture of high grade, standardized concentrates, (2) improvement in the petroleum bases, particularly the availability of water-white, highly deodorized oils which have been used to replace the ordinary kerosene formerly used, and (3) the development of other insecticidal principles for use in conjunction with pyrethrum or alone, notably rotenone and its derivatives, and certain synthetic chemical materials. These developments have brought several basic improvements in the character of household insect sprays in which the earlier products were lacking, such as (1) better and more certain insecticidal strength, (2) elimination of staining which was common among the products sold prior to 1930, (3) elimination of disagreeable after-odor and the need of heavy perfuming to mask the kerosene odor, (4) better dispersion and insecticidal effect due to the physical character of the oil base.

Improvement in general household insect spray quality has gone hand in hand with the development of methods to evaluate both the basic materials used in the spray and also the finished spray itself. Two schools of thought have existed in regard to testing insecticides and insecticide materials,—those who advocate strictly chemical methods, and those who adhere to biological testing against insects. Much research has been done in both of these fields. The names of Gnadinger, Corl, Seil, Wilcoxon and Holaday are associated in America with chemical methods, and those of Peet and Grady with biological testing.

The method of evaluating fly sprays against live flies in a six-foot cube chamber was first developed by Peet and Grady in 1928. It was revised in 1932 and adopted as an official test method by the National Association of Insecticide and Disinfectant Manufacturers. In 1938, this Association adopted an official specification for liquid household fly spray in which the Peet-Grady Test was specified as the evaluation method. The same specification and test were also adopted by the National Bureau of Standards that year as its commercial standard for a liquid household insect spray.

The National Association of Insecticide and Disinfectant Manufacturers has for many years been closely associated with the development of specifications and methods of evaluating household insecticides. In connection with its official testing method, there is manufactured by the Association each year a quantity of a standard liquid insecticide known as the Official Test Insecticide. This product is packaged in six-ounce bottles and sold to manufacturers and laboratories solely for testing purposes. It is a mixture of a number of standard pyrethrum extracts and base insecticide oils, compounded so as to approximate an average commercial fly spray. By parallel testing with this product, usually referred to as the O.T.I., by the Peet-Grady Method, commercial fly sprays are evaluated in terms of the Test Insecticide, being expressed in points plus or minus according to whether the kill of the commercial product is above or below the O.T.I. An AA grade insecticide is 16 plus or higher, an A grade 6 to 15 plus, compared to the O.T.I. B grade is equal to the O.T.I. or within a range of 5 points plus or minus.

During the past several years, the Association has fostered a research program at Ohio State University looking into methods for testing liquid insecticides against crawling insects, particularly the roach and bedbug, and the establishment of specifications for insecticides designed for such uses. This research will ex-

tend to June 1, 1941, and is under the direction of Dr. F. L. Campbell.

IN 1929, the household insecticide industry was thrown into something of furore by the filing of a suit in a United States District Court in California aimed to sustain a patent issued covering the ordinary pyrethrum insect spray. This patent was known as the Terry Patent, U. S. No. 1,599,851, and had been issued September 14, 1926. At the time it was issued, it had attracted little or no attention. The industry, in fact, did not take it very seriously until early in 1929, when the Terry Fly Spray Co., owner of the patent, filed suit for infringement against the An-Fo Manufacturing Co. of Oakland, Calif.

The patent suit, which was in fact a threat to the then budding fly spray industry, brought about a collaborative defense, some fifty other manufacturers contributing to a common defense fund. It was shown that pyrethrum fly sprays had been manufactured for ten years prior to the filing of the patent by essentially the same process as that described in the patent. Accordingly in February, 1930, the District Court at San Francisco declared the patent invalid. The decision was never appealed and the threat of a licensed industry passed on.

UP UNTIL 1930, practically all household insect sprays on the American market were straight pyrethrum products. The use of chemical ingredients began to attract attention about that time and their use grew steadily. Since 1935, the trend has been more and more toward mixtures and combinations in place of pyrethrum alone. In 1932, rotenone was first used in a fly spray in combination with pyrethrum, the process being covered by a patent. A slower, but more certain kill was claimed for the pyrethrum-rotenone combination, giving the spectacular knock-down of pyrethrum and the more positive kill of rotenone. Various other combinations were tried out with considerable success, including certain products designed as "boosters" for pyrethrum.

During the past three years, the high price of pyrethrum has accentuated the trend toward combinations of insecticidal materials. The use of rotenone materials has expanded greatly. Wide progress has been made in the use of certain synthetic organic chemicals which have proved to be unusually effective in two ways, (1) boosting the kill of pyrethrum insecticides and (2) cutting cost per gallon. It has been estimated that today more than half of the household insecticides on the market are using some portion of a synthetic ingredient. As the price of pyrethrum remains at three times its normal average, it is believed that the use of synthetic materials will continue to expand.

Liquid household insecticides have been brought to a high degree of quality during the past ten years. In fact a volume could be written on all ramifications of their development over this short time. Only a few of the high lights have been touched upon here as space would not permit otherwise. But out of the complications which have arisen with the growth of this business, stand one or two objectives which have been and still are the aim of the industry. The first is to develop wholly synthetic materials which are chemically identical with the active principles of pyrethrum and rotenone, or a synthetic material which is superior in kill and still completely safe, which is odorless, colorless, and tasteless,—and which is cheap. This is still the ultimate aim of household insecticide research. What another ten years of history of the industry will bring forth in this direction remains to be seen.

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An active oxidase or oxidizing enzyme consisting of the system peroxidase plus peroxide, was extracted from pyrethrum by means of 30 per cent alcohol. Its activity is greatest at pH 4.33-4.93, a very slightly acid pH, at 35° C. It becomes inactive on heating above 75° C. Mario Covello. *Ann. chim. applicata* **29,** 333-9; through *Chem. Abs.*

—— ♦ ——

Introducing the liquid insecticide in the 6x6x6 Peet-Grady Chamber with the standard atomizing equipment. Knock-down is computed in 10 minutes, deads in 24 hours.

FURNITURE POLISH

By Dr. C. A. Tyler

FURNITURE polish has for its purpose the cleaning and polishing of furniture, the first being a relatively simple task, the last a trifle more complex. Soap and water, the old reliable among cleaning materials, falls down when it comes to cleaning a varnished surface. This is more because of the presence of the soap than of the water, since many successful furniture cleaners contain water. However, water alone would leave a varnished surface dull and unattractive. What is really needed is a light film of oil or wax to give the high reflectance which enriches the appearance of furniture. The most popular polishes today contain both water and oil in the form of emulsions.

Water helps to remove soil and hence gives to a polish a cleaning action and also serves as a diluent for the oil. The oil remaining on the furniture after it is polished should be a very thin film so that the surface will not be greasy and pick up dust readily. The desired effect can be obtained by pouring a few drops of oil on a damp cloth and rubbing well, but for a commercial product, it is much more satisfactory to have a stable emulsion in which the oil is dispersed throughout the water phase by means of an efficient emulsifying agent. This gives the product the pleasing appearance of a creamy liquid and also assures a definite proportion of mineral oil to water.

The emulsion should be only just stabilized as in use it breaks down to permit the oil to wet the surface preferentially. Otherwise the varnished wood would merely be wet with water which is the external phase. The polish is wiped on with one cloth and then wiped off with another. Various soaps are used as emulsifying agents such as triethanolamine soap, soaps made with morpholine and other amines, and soaps made with various fatty acids. A neutral potash soap is preferable to the ordinary soda-tallow soap. A few sulfonated oils serve as emulsifying agents, the most suitable being those which are highly sulfonated and which are neutral. These have to be used in quite high proportions to maintain stable emulsions. For this particular purpose they are frequently neutralized with ammonia. A number of emulsifying agents are used which appear on the market under trade names, some of which consist essentially of glycol oleate, glycol stearate or a similar compound. Water-soluble gums such as gum tragacanth are also used, or in some cases a mixture of gum with a small amount of other emulsifying agent.

When soap is used as emulsifying agent the minimum amount should be present, as in the following: (Parts by weight.)

Mineral oil	25
Naphtha	12
Stearic acid	4
Triethanolamine	2
Water	57

Water is the cleaning agent, mineral oil the polishing agent, naphtha a diluent for the oil, and soap the emulsifying agent. The best results are usually obtained by making the soap in the product with the use of fatty acids rather than by adding soap as such. The stearic acid is melted, the naphtha added to the mineral oil and this stirred into the warm stearic acid. The triethanolamine is warmed with the water in a separate kettle to about 60°C. (140°F.) when it is gradually added with stirring to the oil mixture. The equipment required is quite simple. Jacketed kettles that can be

heated and cooled with running water, and fitted with a mechanical stirrer, are all that is required.

An even simpler formula is: (Parts by weight.)

Mineral oil	50
Ammonium oleate soap	3
Water	47

Again the soap is made in the product by mixing oleic acid with the mineral oil and adding the ammonia in aqueous solution. While many of these products retain their natural light color, in some cases dyes are added. Very frequently inexpensive perfume compounds are added as odorants, pine needle being popular. Oil of citronella, oil of cloves, oil of sassafras and similar oils are also suitable. Nitrobenzene or oil of mirbane has been used but is now prohibited in some places because of the toxicity of its vapors. Benzaldehyde has been used but is unstable, being oxidized to benzoic acid which is without odor value.

Another commercial product contains the following:

	Per Cent
Light mineral oil, (36-7° Be.)	20
Xylene	9
Light blown castor oil	10
Potash soap	1
Water	60

Xylene serves as a diluent for the mineral oil. Blown castor oil has been oxidized by blowing air through it and is quite different from ordinary castor oil, which has sometimes been incorporated in furniture polish, but mistakenly as it has a marked tendency to leave the furniture sticky. Light blown castor oil does not mix with mineral oil, although heavy blown castor oil does. The emulsion therefore consists of two immiscible oils and water.

A much more complicated product contains the following:

	Per Cent
Mineral oil, (sp. gr. 0.8769 60°F.)	11
Blown castor oil	1
Glycerine	5
Alcohol	5
Triethanolamine oleate	1
Gum tragacanth	0.5
Diatomaceous earth	12
Water	64.5

Glycerin and alcohol both serve as wetting agents. The emulsifying agent here is a combination of soap and water-soluble gum. Diatomaceous earth is a very soft abrasive often used in automobile polish but having no real justification in furniture polish. Many polish manufacturers advertise their product for polishing furniture and automobiles, as though the finishes in the two cases were the same and the type of soil encountered were the same, neither of which is true. Soil on a car becomes much heavier and is quite different from that on furniture, so that a siliceous abrasive is necessary on a car as an ingredient which cleans by friction. Soil on furniture except for serious stains which furniture polish will not help, is removed simply by wiping off. While diatomaceous earth is so soft that it usually does not scratch, it is apt to form deposits in the carving of furniture from which it is removed with difficulty. Since it serves no useful purpose there is no reason to put it into a furniture polish. Sometimes an automobile polish can be modified to give a furniture polish simply by leaving out the abrasive.

With sulfonated oil as emulsifying agent the proportion of mineral oil can be varied considerably, as in these two successful commercial products: (By volume.)

	Per Cent A	Per Cent B
Mineral oil	48	38
Sulfonated castor oil	14	12
Water	38	50

These products have the appearance of oily liquids rather than of the usual emulsions. This type of polish is very popular but is strictly a furniture polish and should be labelled as such. It is not efficient as an automobile polish.

When a gum or mixture of gums is used as emulsifying agent only a small proportion is needed:

	Per Cent
Mixture of kerosene and light mineral oil	10
Glycerine	4
Mixture of gum arabic and gum tragacanth	2
Water	84

Here the proportion of water is higher than in most oil-in-water emulsions.

Perhaps the question might occur to the manufacturer as to whether a *water-in-oil* emulsion could be used. Theoretically it should be the best answer, but practically the few products which have attempted such formulation have been rather unsatisfactory because of excess greasiness. Most of these products are not emulsions, but simply two layers of oil and water which need to be shaken up before use. Conversion of these into smooth emulsions containing enough water so as not to be greasy, yet keeping the oil as the external phase, is suggested as a research problem.

The oil-emulsion polishes represent those having the best sales acceptance at the present time, because of satisfactory appearance since they do not separate into two layers, they are easy to apply, and are quickly rubbed up. An older type of product is represented by the following formula developed by the Navy Department's Bureau of Construction and Repair: (Parts by weight.)

Vinegar (acetic acid, dilute)	125
Petroleum spirits	226
Turpentine	135
Alcohol	22
Boiled linseed oil	100
Raw linseed oil	121

Vinegar is an acid cleaning agent since it contains 4 per cent of acetic acid. Acid agents are incompatible with many emulsifying agents used and are not present in emulsion products. The combination of raw and boiled linseed oil with turpentine and mineral oil is practically an attempt to apply a fresh film of varnish, as the linseed oil is supposed to oxidize and form a very light protective coating. Such a product is not a real polish, but a cross between a varnish and a polish, as is any polish containing a drying oil.

One other formula representative of the older type of product is the following:

	Per Cent
Light mineral oil	58
Antimony trichloride	2
Glycerine	7
Water	33

This is an oil-water mixture which is shaken before use to form an exceedingly temporary emulsion. Antimony trichloride is an acid cleaning agent since it hydrolyzes in solution to give hydrochloric acid. It was present in many patented polishes ten years ago, but is now in the discard along with vinegar. This formula is an example of an individual product which established a market for itself and continued to be sold after many of its competitors based on similar ingredients had dropped out.

A recently patented furniture polish (U. S. Patent No. 2,141,729), utilizes the sodium salt of a fatty alcohol sulfate as emulsifying agent in combination with a water-soluble gum:

	Per Cent
Oil	17
Glycerine	5.65
Diatomaceous earth	12.25
Amyl acetate	0.25
Formaldehyde	1
Gum tragacanth	0.2
Sodium alkyl sulfate	0.5
Water	63.15

Amyl acetate is present as an odorant, formaldehyde as a preservative, glycerine as wetting agent. The abrasive is probably included with the idea of broadening the use of the product.

OTHER types of polishes less popular than oil emulsions but of sufficient importance to warrant mention include (1) oil polishes, (2) wax emulsions and (3) liquid and paste waxes. A single oil with an added odorant may be used, or blended oils, or sometimes oils combined with solvents. So-called lemon oil is used by many a housewife as furniture polish. However, light mineral oil will command a higher price if labelled furniture polish. One such commercial product is a plain good-quality mineral oil having a specific gravity of 0.842 at 60°F.

A product which combines oil and solvent contains:

	Per Cent
Light spindle oil	60
Mixed fatty acids	3
Benzol	15
Methanol	20
Pine oil	2

The spindle oil used is a light-bodied lubricating oil having a viscosity less than 100 Saybolt at 100°F. The fatty acids are a refined grade of red oil consisting largely of oleic acid with a little palmitic and stearic acids. In this combination, the fatty acids are intended to give improved wetting power. The pine oil is an odorant; benzol and methanol serve as diluents. A film containing spindle oil and fatty acids remains on the furniture. The chief difficulty with this kind of product is that it requires an enormous amount of rubbing to spread it properly.

Wax emulsions are oil-in-water emulsions containing wax and often containing a volatile oil to aid in holding the wax in solution or suspension. Inclusion of wax thickens up the emulsion. Soft waxes such as beeswax have been used, but a hard wax such as carnauba is preferable. The wax, when rubbed up, gives a much more permanent gloss than oil alone. A wax polish requires more rubbing than an oil emulsion in order to get the film evenly distributed and not too thick. A wax-kerosene-water mixture is made as follows: (Parts by weight.)

Carnauba wax	100
Kerosene	75
Oleic acid	9
Stearic acid	9
Triethanolamine	8
Water	800

The carnauba wax and stearic acid are melted together, then the oleic acid and kerosene added. About 240

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A Fundamental Error in the PEET-GRADY METHOD

By Christopher A. Murray

McLaughlin Gormley King Company

THE Peet-Grady method for testing insecticides against houseflies was first described 1928 (1). Prior to that time, the test method generally in use consisted of spraying wild flies in any convenient room with a hand sprayer. The Peet-Grady method was an improvement because it described a procedure for rearing flies in the laboratory, based on previous work by Glaser (2). In addition, the method specified the size of test chamber, time of exposure to the spray, temperature and humidity of the rearing chamber, amount of spray, and the pressure at which the spray should be applied.

The method was adopted as official by the National Association of Insecticide and Disinfectant Manufacturers in 1932 (3), together with the following standard, "The members of the Insecticide and Disinfectant Manufacturers' Association agree that a minimum standard for a general household liquid spray insecticide should be 95 per cent down ten minutes after spraying, and at least 60 per cent kill, twenty-four hours after spraying, as determined by the Peet-Grady Method on house flies." The publication of the method and standard in *Soap* was accompanied by an editorial advising caution in the widespread use of results, until full working knowledge and revisions could be obtained. It was generally recognized even at the time that further investigation of the method was needed.

In 1932 Gothard (4), as Chairman of the Insecticide Standardization Committee, raised the following questions for further study:

"1. The temperature at which the test is to be run, and possibly the temperature of the insectary in which the flies are raised.

"2. The effect of variation in the droplet size of the spray. This is tied up with the type of atomizer and the question of whether ordinary commercial atomizers as commonly sold actually do throw uniform sprays even though they are of identical make.

"3. The possible increase in uniformity of results to be obtained by the use of paper on the floor of the killing chamber.

"4. The development of a suitable standard for the measurement of the resistance of flies of various origins."

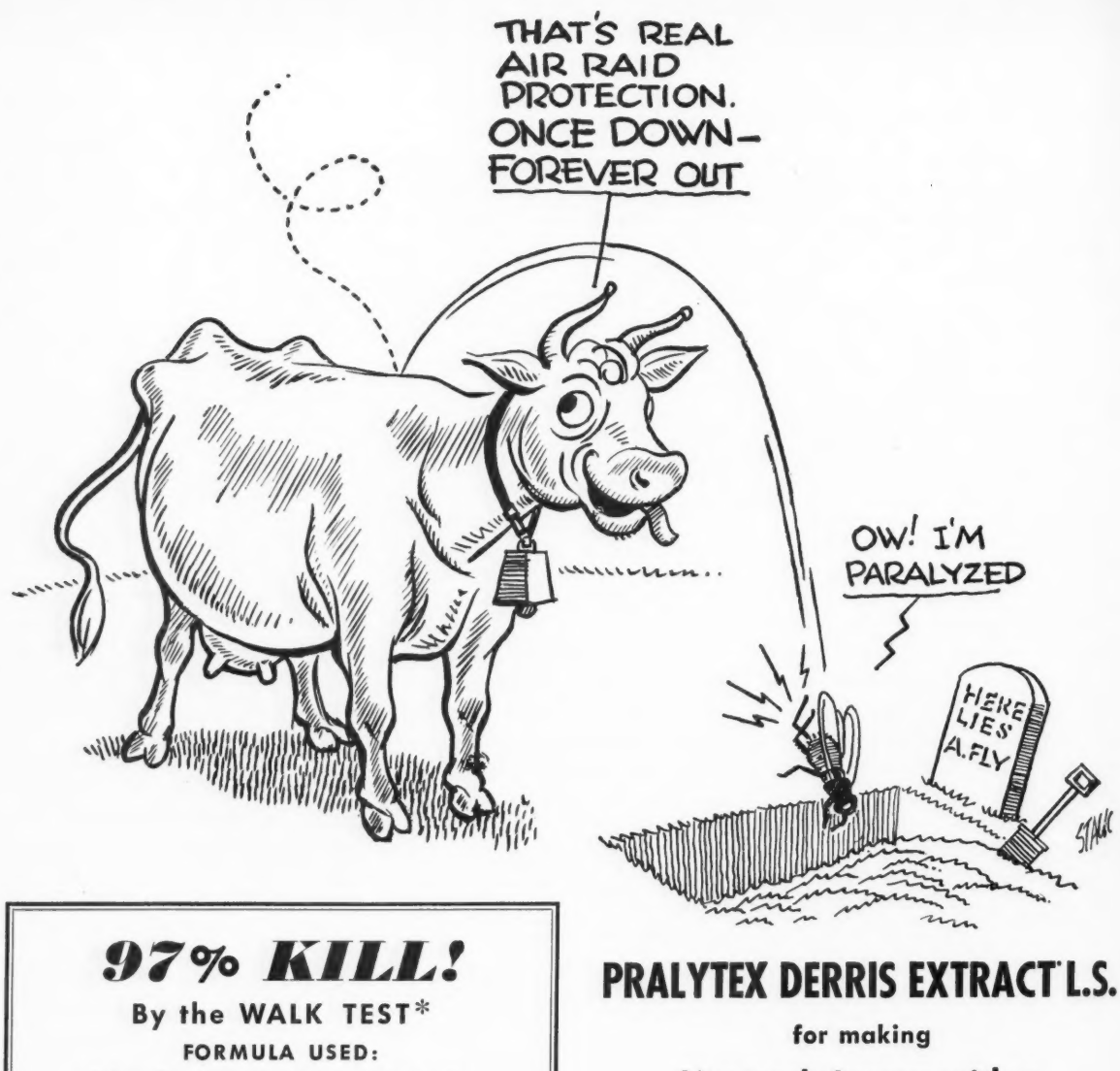
Gothard (5) in referring to the Peet-Grady method later said, "I relate these incidents to illustrate that while we have a standard, based upon a method which is, by implication, a standard method, the method is actually in need of further study and refinement. It needs to be developed further so that anyone of suitable training can follow the method, and obtain reliable results. A method which will permit of such divergent results as described cannot properly be called a standard method. In order that the method may be offered as a true standard method, its entire procedure must be so closely defined that any laboratory which follows the prescribed procedure accurately must obtain results which are reasonably comparable with those obtained in any other laboratory."

Some progress was made in 1933 toward the development of a standard sprayer to be used in the test.

In 1934, Peet (6) reported the reactions of those interested in the method to changes suggested by Nelson. Peet stated, "The following significant changes appear, therefore, to be generally favored; 1. The adoption of some standard material with which the effectiveness of insecticides of unknown strength may be compared. 2. Approval of synthetic breeding media."

In June, 1935, Weed, as Chairman of the N.A.I.D.M. Standardization Committee, reported (7): "The Association must consider these aspects of the Peet-Grady method: (1) that there may be wide differences between laboratories running the same sample; (2) that an undetermined variation is inherent in the method; (3) that accurate placements in the correct relative position of *appreciably* different strength materials are characteristic of most laboratories using the method; (4) that undue selling pressure has resulted in abuse of these results; (5) that through the use of a standard insecticidal material your committee hopes to bring about better agreement; (6) that this committee feels that in view of the above, the results of the Peet-Grady test should not be employed as a sales argument."

In June, 1935, the Committee decided to make a study of the possible use of a standard test insecticide. Accordingly, three samples, two containing pyrethrum and one containing benzophenone, were submitted to cooperating laboratories. Fifty tests were made on each sample by each of these laboratories.



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Due to the phenomenal paralytic action of this product (formerly called Protex), upon the legs of insect pests, the more appropriate and suggestive name, PRALYTEX, has been adopted.

In the opinion of the writer, the results of these tests were not sufficient evidence of the method's accuracy to set up a method of evaluation using grades. However, a preliminary report on the results a year later led to the adoption by the N.A.I.D.M. of an official pyrethrum test insecticide. A more complete report in December, 1936, led to the adoption of the Official Method of Evaluating with the following grades:

Grade AA, excellent—sprays giving a kill at least 21 per cent greater than the kill of the test insecticide.

Grade A, good—sprays giving a kill 11 per cent to 20 per cent higher than the kill of the test insecticide.

Grade B, equal to the test insecticide —sprays giving a kill between 10 per cent lower and 10 per cent higher than the test insecticide.

Grade C, poor—sprays giving a kill 11 per cent to 21 per cent lower than the test insecticide.

Grade D, little value—sprays giving a kill more than 21 per cent lower than the test insecticide.

A year later, in December, 1937, grades lower than the test insecticide were dropped because they were felt to be of no value, and the grading system was changed to include only the grades B, A and AA, with slightly narrower limits, as follows:

Grade AA, sprays giving a kill at least 16 per cent higher than the test insecticide.

Grade A, sprays giving a kill 6 per cent to 15 per cent higher than the test insecticide.

Grade B, sprays giving a kill between 5 per cent lower and 5 per cent higher than the test insecticide.

The purpose of adopting a standard test insecticide was to assist in eliminating insecticides that were too weak to give commercially satisfactory results. A standard should also tend to eliminate the difficulties due to different levels of kill in various laboratories on the same sample. Theoretically, two samples should always test the same within the limits of sampling error, if they have the same active principle content, provided the method of test is reproducible. Differences in insect susceptibility should not affect the results because the error of sampling is purely mechanical. A sample somewhat less toxic than the standard sample should give a kill lower than might be accounted for on the basis of sampling error.

There are two drawbacks to the use of a standard insecticide to establish grades denoted by plus or minus differences in per cent kill from the standard. The first is, that increasing the active principle content does not increase the kill proportionately; doubling the active principle content, for example, does not double the kill. The second is, that a variable factor of fly susceptibility is introduced in addition to the sampling error. Because of this, a given increase in active principle content will produce a greater additional kill with weak flies than with strong flies. Due to this factor, one laboratory using strong flies might report a sample as grade A and another laboratory, with weak flies, might report the same sample as grade AA.

At the time the grading system was established, action was taken by the N.A.I.D.M. to secure its use as a commercial standard. In September, 1937, the Association requested the U. S. Bureau of Standards to establish the Peet-Grady method and the grading system as a commercial standard for household insecticides. The U. S. Bureau of Standards, with the approval of the Food and Drug Administration, complied with this request (8). The Commercial Standard states: "The Peet-Grady method of determining efficiency of contact liquid insecticides is subject to variations that necessitate close attention to details of equipment and procedure to obtain comparable results. Refinements that result in higher precision are being developed by constant research and are incorporated in the official method from time to time." In view of the discussion above, it would seem that the adoption of the standard and grading system was made with insufficient investigation as to the soundness of such a standard.

The results of the cooperative tests (9), the adoption of the Official Test Insecticide (10), the discovery of the difference in susceptibility of male and female flies (11), and the introduction of the Large Group Method (12) ostensibly put the method on a much sounder basis. Yet even in the same laboratory, variations continued to occur, and it has never been conclusively demonstrated that different laboratories have been able to agree on results with any degree of unanimity except when the stronger sample contained much more active principle than the weaker.

The present concept of the test is not so much that there are no remaining sources of error as, that the use of a control or test insecticide corrects for all defects in experimental technique and all errors due to variation in the vitality of the flies. Simanton (10) stated in an official report on cooperative tests, "Pairing eliminates the variations due to batches of different resistance being used; to a large extent it compensates for variations in testing technique, and it also tends to correct for the many changes that may occur in the fly population during the day's testing,—several of the factors suspected of causing variation in results could be minimized by running the paired tests for each sample within a short period of time. Such factors are temperature, humidity, feeding activity, etc. . . ."

As a result of this attitude, the responsibility for accurate testing has been shifted from exact attention to the rearing of the test insects and experimental detail, to the control insecticide. The official specifications for rearing the flies are so vague that considerable variation in their vitality is almost inevitable.

The use of the control insecticide has been taken as license to conduct tests according to individual notions or convenience, and experimental detail has been modified accordingly. Some operators move the nozzle of the sprayer back and forth while spraying, some use a circular motion and some hold the sprayer perfectly still. Some introduce the

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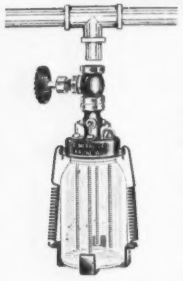

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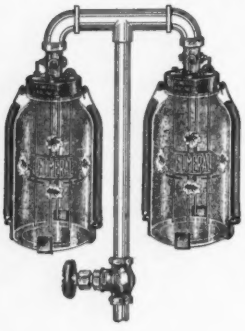

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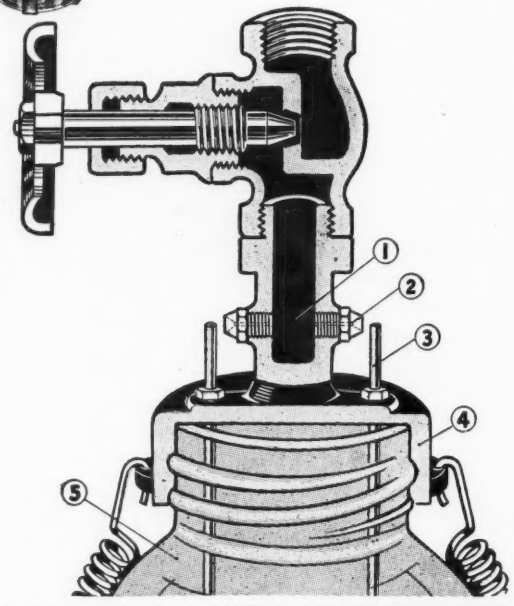

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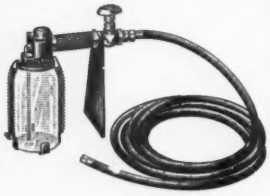

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TABLE I. DOSE OF PYRETHRINS RECEIVED BY INDIVIDUAL MALE AND FEMALE FLIES,—PEET-GRADY METHOD (MICROGRAMS)

Culture 1 Male Flies		*Culture 2 Male Flies*		*Culture 3 Male Flies*		*Culture 1 Female Flies*		*Culture 2 Female Flies*		*Culture 3 Female Flies*	
Test 1	*Test 2*	*Test 1*	*Test 2*	*Test 1*	*Test 2*	*Test 1*	*Test 2*	*Test 1*	*Test 2*	*Test 1*	*Test 2*
.149	.270	.267	.250	.410	.227	.267	.265	.258	.385	.372	.320
.293	.308	.286	.314	.460	.410	.271	.348	.348	.390	.389	.348
.312	.320	.412	.325	.462	.447	.360	.359	.348	.396	.400	.419
.348	.339	.421	.355	.531	.465	.364	.372	.367	.408	.437	.473
.400	.351	.460	.390	.538	.476	.388	.388	.396	.417	.465	.482
.412	.375	.465	.392	.544	.491	.396	.390	.410	.432	.476	.513
.421	.394	.465	.396	.545	.494	.414	.400	.412	.432	.479	.526
.421	.402	.465	.408	.552	.506	.417	.421	.421	.444	.482	.533
.421	.415	.467	.408	.552	.544	.425	.426	.435	.444	.485	.533
.430	.421	.471	.421	.563	.545	.449	.430	.449	.447	.488	.544
.447	.430	.480	.421	.582	.588	.457	.432	.454	.449	.497	.548
.448	.457	.482	.428	.588	.600	.463	.435	.465	.455	.515	.563
.449	.470	.484	.435	.594	.606	.465	.444	.470	.457	.537	.566
.449	.473	.486	.435	.600	.612	.469	.449	.476	.465	.552	.567
.457	.476	.494	.437	.600	.615	.486	.462	.480	.476	.561	.591
.457	.476	.500	.444	.606	.628	.500	.476	.484	.476	.563	.600
.460	.485	.506	.451	.625	.628	.504	.476	.488	.479	.566	.600
.462	.494	.506	.452	.625	.631	.516	.482	.488	.480	.588	.628
.465	.497	.513	.457	.635	.642	.524	.485	.496	.482	.600	.632
.465	.500	.513	.471	.649	.649	.540	.500	.500	.485	.622	.642
.478	.503	.515	.473	.667	.649	.548	.513	.504	.491	.625	.645
.488	.503	.516	.480	.667	.652	.550	.513	.511	.500	.631	.656
.502	.508	.517	.492	.667	.656	.563	.519	.513	.500	.632	.659
.508	.517	.526	.504	.686	.663	.591	.526	.516	.500	.635	.659
.526	.526	.529	.516	.694	.667	.600	.552	.524	.511	.652	.667
.548	.533	.533	.517	.698	.674	.600	.553	.533	.516	.674	.674
.550	.537	.536	.517	.698	.682	.642	.574	.536	.531	.686	.678
.550	.540	.545	.522	.706	.686	.678	.588	.555	.533	.686	.678
.553	.544	.561	.526	.710	.686	.682	.600	.555	.533	.686	.698
.553	.550	.566	.529	.727	.686	.698	.600	.559	.540	.714	.698
.553	.553	.571	.531	.727	.690	.698	.618	.571	.552	.736	.714
.555	.555	.571	.533	.732	.694	.698	.622	.571	.555	.736	.723
.558	.558	.580	.536	.745	.698	.741	.682	.577	.571	.759	.734
.563	.559	.588	.538	.750	.710	.764	.714	.582	.577	.762	.750
.571	.563	.594	.538	.759	.714	.816	.727	.600	.580	.762	.764
.580	.569	.600	.540	.769	.714	.873	.738	.603	.588	.764	.784
.594	.571	.606	.540	.799	.736	.979	.750	.618	.606	.769	.789
.600	.574	.612	.558	.779	.788	1.212	.750	.622	.612	.789	.820
.603	.580	.615	.594	.780	.842	1.371	.759	.649	.638	.800	.870
.606	.582	.618	.600	.780	.845		.764	.659	.645	.820	.874
.609	.588	.622	.606	.842	.856		.813	.659	.645	.860	.899
.619	.592	.625	.625	.851	.870		.857	.674	.649	.869	.914
.659	.600	.631	.631	.856	.874		.873	.686	.649	.870	.952
.663	.603	.632	.632	.889	.879		.930	.714	.678	.879	.981
.674	.606	.642	.652	.976	.889		1.000	.745	.690	.879	1.026
.682	.606	.645	.686	.988	.914		1.048	.750	.694	.914	1.039
.690	.612	.652	.694	1.000	.919		1.053	.750	.698	.919	1.481
.698	.625	.667	.706	1.046	.936		1.062	.755	.736	.970	
.698	.625	.690	.745	1.067	.941		1.171	.811	.774	.970	
.706	.632	.698	.745		.982		1.200	.851	.784	1.026	
.724	.638	.698	.800		1.019		1.364	.882	.811	1.067	
.727	.645	.714	.839		1.019			.945	.851	1.075	
.727	.656	.736	.984		1.240			1.000	.889	1.081	
.748	.674	.764						1.043	.909	1.143	
.762	.674	.789							.992	1.143	
.777	.678	.845								1.143	
.780	.678									1.159	
.792	.690									1.300	
.796	.698									1.322	
.808	.706									1.391	
.833	.762									1.600	
.842	.762										
.930	.788										
.960	.808										
	.813										
	.833										
	.919										
	.923										
	.972										
Average dose:	.581	.575	.562	.529	.695	.703	.589	.637	.579	.571	.764	.690
Ratio of greatest to least:	6.44	.360	3.16	3.94	2.60	4.81	5.13	5.15	3.95	2.58	4.30	4.63
Standard deviation:	.160	.145	.109	.143	.138	.181	.229	.251	.166	.143	.268	.202
Standard error:	.020	.017	.015	.019	.019	.025	.037	.035	.023	.019	.035	.029
Variance:	.0255	.0209	.0120	.0191	.0192	.0329	.0524	.0631	.0275	.0204	.0720	.0408
Test 1 vs. Test 2, t value:	.229, P=>.05		1.39, P=>.05		0.250, P=>.05		0.386, P=>.05		1.409, P=>.05		1,477, P=>.05	
Test 1 vs. Test 2, F value:	1.22, P=>.05		1.59, P=>.03		1.71, P=>.01		1.20, P=>.05		1.35, P=>.05		1.76, P=<.01	

12 cc. of insecticide through eight holes in the test chamber, some use six holes and some four holes. In two laboratories the entire amount is sprayed through one hole, using an observation window to see where the spray is directed (9).

The writer has attempted during a period of about two years to determine why the results obtained by the method are not more accurate. Such factors as temperature, humidity, interval between feeding and spraying, the type of food available for recovering flies, whether recovery is the same in light or darkness, and fly rearing were thoroughly investigated. Attempts were made to evaluate the effects of using different pressures for spraying, spraying from different sides of the chamber and varying the amount of spray delivered. Much detailed information was gained by studying the effects of such factors as different types of bran and alfalfas with different protein contents. The amount of water present, the pH and temperature of the medium and its decomposition were also investigated.

The results of these studies are beyond the scope of the present report. It is sufficient to say that considerable knowledge was obtained that would aid in producing flies more uniform in size and vitality. However, it became increasingly apparent that some unknown factor still remained to influence the mortalities. Finally the spraying technique itself was more carefully studied, especially in regard to the uniformity of the dose received by individual flies.

In order to determine whether or not each fly received the same amount of spray in each test, a colorimetric method was developed. Flies were sprayed with a dyed solution; after spraying, the color was washed from the flies, made up to a standard volume, and measured directly against a known standard in a colorimeter. The individual doses could thus be easily determined. The following procedure was found to be satisfactory:

A solution of oil-soluble red dye was prepared from red dye E.G.N. (National Aniline and Chemical Co.). Three grams were weighed into a 100 cc. beaker, moistened with deodorized kerosene, and transferred to a 100 cc. volumetric flask. Twenty cc. of benzene and five cc. of pyrethrum extract containing 2 grams of total pyrethrins per 100 cc. were added. The solution was then allowed to stand overnight, made to the mark and filtered through No. 42 Whatman filter paper. The solution was deep red in color and contained one mg. pyrethrins per cc.

One hundred flies were used for each test. The flies used had emerged from pupae mixed and counted out at random in lots of 115 and reared in separate small rearing cages. It had been observed that flies tended to congregate on the screen covering the exhaust fan in the back of the testing chamber during and after the test. To avoid this, the screen was covered with waxed paper fastened down with cellulose tape during each test.

Twenty-four cc. of spray were used for each test. There was no evidence of any difference in insecticidal action between the dyed insecticide and a spray composed of pyrethrum and oil alone. Flies treated with the dyed spray gave about the same kill as flies treated with a similar spray without the dye. It is considered unlikely that the dye could have introduced any error in the results.

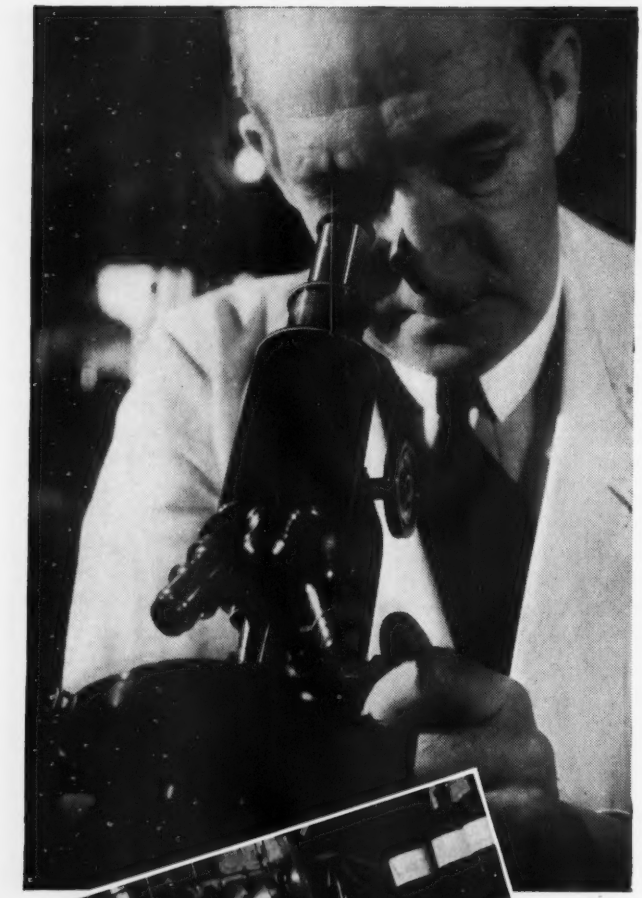
Each fly knocked down was transferred to an 8 cc. vial, calibrated at 5 cc., to which 2 to 3 cc. of the deodorized kerosene had already been added: the vials were shaken and allowed to stand overnight. Each fly was then removed from its vial, washed with approximately 1 cc. of deodorized kerosene, the washings being added to the vial, and the solution in the vial was made to the 5 cc. mark. Washed flies treated with benzene gave no further indication of color, so that it is certain the deodorized kerosene washing removed all of the dye.

The dose for each fly was then estimated by comparison with a standard dye solution in a Klett colorimeter. To cover the range of doses found, a series of standards was prepared. This was done by diluting the original spray solution with deodorized kerosene so as to contain 0.2, 0.4, 0.8 and 1.6 micrograms of pyrethrins per 5 cc.

The individual doses for male and female flies, on three cultures, with two successive tests on each culture are given in Table I. It is clear that there is a very wide variation in the doses received by individual flies. This is true for both sexes. The ratio of the greatest dose to the least dose varies from 2.60 to 6.44 for the male flies and 2.58 to 5.15 for the female flies. These differences indicate little uniformity in the spraying technique for the test. An exact statistical comparison of this variation confirms this conclusion. If the flies were sprayed alike, the range and the distribution of doses should be uniform. The difference in the variation of the individual doses for paired tests is proof that even in pairs of successive tests the flies do not receive the same amount of spray, nor, in the same manner.

This may be the result of a combination of several factors. In the first place, the flies do not distribute themselves about the chamber in the same manner for each test. Secondly, the flies have a tendency to fly about during the spraying. When a corner of the chamber is sprayed, the flies in that corner will move away from the spray to another corner not being sprayed. Thus, as the sprayer is moved from hole to hole, some flies get a large dose and some almost escape getting any. A third factor is that during the 10 minute exposure, some of the flies remain quiet, while others fly about in the mist.

IT is evident that a large error is inherent in the Peet-Grady method as a result of the differences in individual fly doses. In order to measure this variation, three series of tests were made. Five hundred flies were used in each test. For each test either 12, 24 or 36 cc. of insecticide were used. The percentage kills were determined as usual and the average kills are recorded in



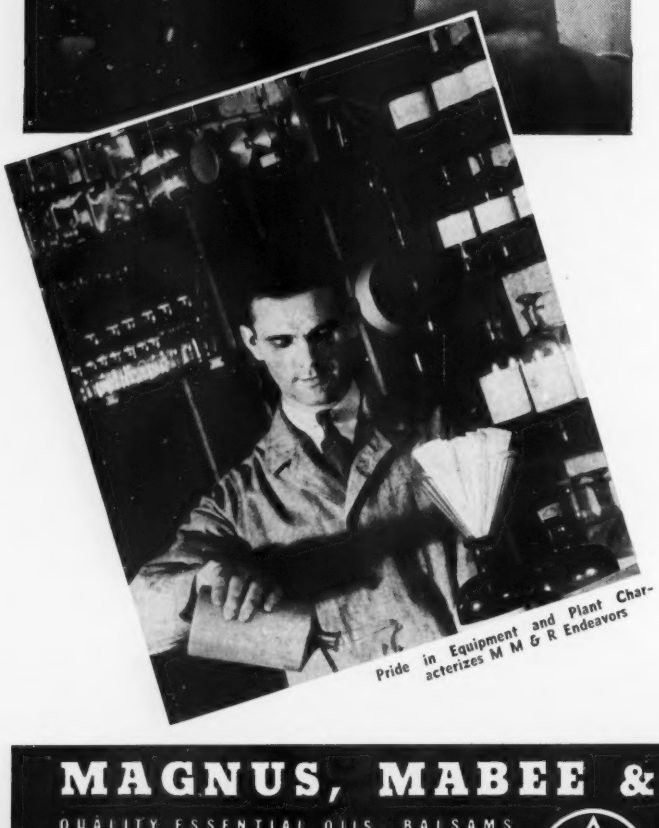


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Table II. Three more series of tests were then made in which 500 flies were sprayed with 12, 24 or 36 cc. of dyed insecticide. The individual doses were not determined separately, but the total dose was estimated by dissolving the color from all the flies of each 500-fly test, diluting to 200 cc., and comparing with the color standard. The average individual dose was then calculated, and these averages are also given in Table II.

TABLE II. DOSE OF PYRETHRINS AND KILLS PRODUCED BY DIFFERENT AMOUNTS OF INSECTICIDE SPRAYED INTO THE PEET-GRADY CHAMBER

Amount sprayed cc.	*Average kill, males %*	*Average kill, females %*	*Average dose per fly, micrograms*
12	37	8	.470
24	74	19	.535
36	83	29	.604

The limits of variation for the average dose (Table I) can be estimated by adding to and subtracting from the average dose three times its standard error. These calculated limits in average dose (Table I) can now be compared with corresponding limits obtained by spraying with different amounts of spray (Table II). It is apparent that the error introduced into the Peet-Grady method because of the variation in dose per fly is of the same magnitude as if the operator did not measure the amount of insecticide sprayed into the chamber, but took at random anywhere from 12 to 36 cc. of spray for each test.

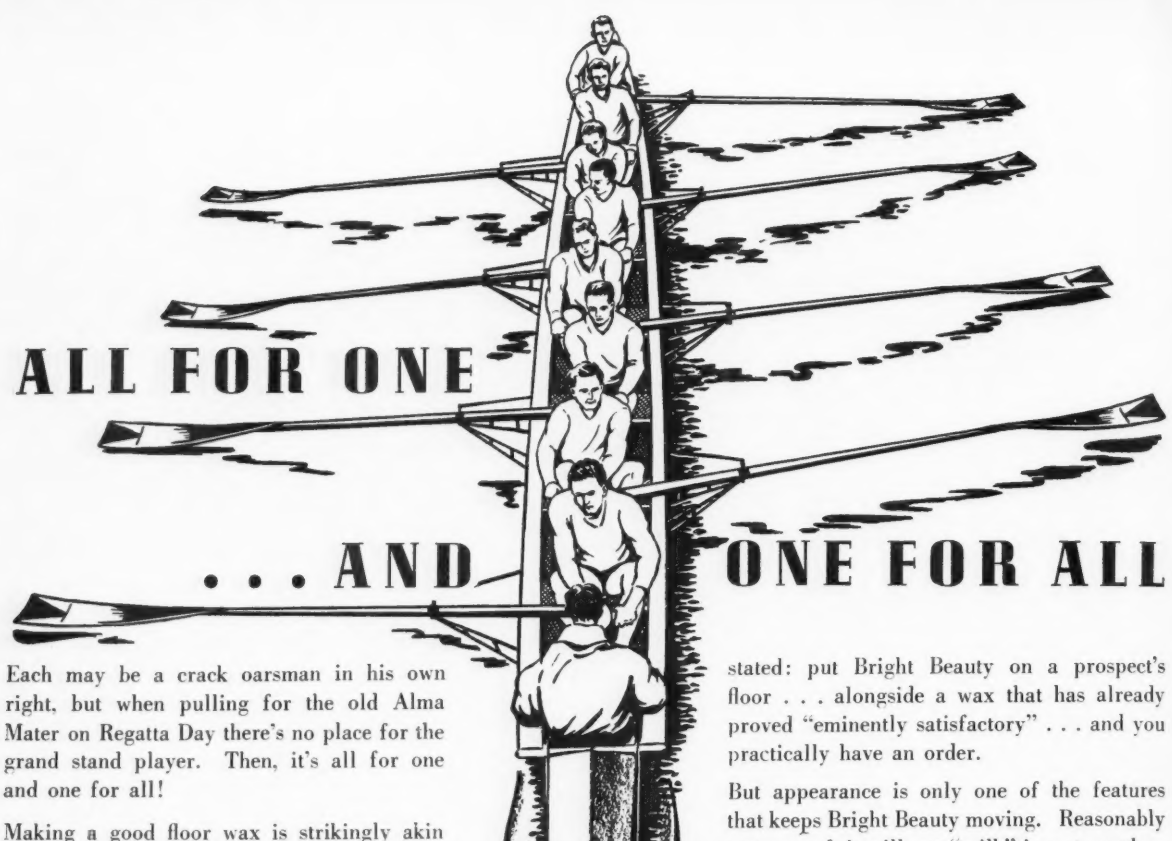
The basic assumption of the test insecticide and the paired test procedure is that all the factors influencing each of the paired tests have a very similar influence on the results of each of the paired tests. These variations in individual dose (Table I) invalidate the application of the paired test procedure. It is evident that mortalities will be much more influenced by this uncontrolled variation in individual dose, and factors connected with it, than by any other influence. Because this dosage error is so large, it is impossible to determine accurately the influence of other possible factors such as temperature, humidity, feeding activity. In many cases a real difference in insecticidal power of samples to be evaluated will be covered up by this source of error. The wide variation in individual dose therefore must make for questionable test results, because if the dose is not applied to the flies in the same manner for each pair of tests, it is impossible to know if a difference in kill is due to a difference in administering the dose or to a real difference in the insecticidal value of the samples of insecticide.

There is an evident restraining influence on the sensitivity of the mortality test from this variability in dose. Each series of doses such as has been presented may be divided into three zones. One zone, the sub-lethal zone, includes all the doses which kill no flies. A second zone, the intermediate zone, includes doses from which the flies die or recover depending upon their inherent individual susceptibilities. The third zone, the lethal zone, includes all the doses from which no flies recover. Doses in the sub-lethal and lethal zones contribute nothing to the sensitivity of the test. They are wasted on flies which respond in neither direction when different insecticides are compared. The proper insecticide test should include doses to the insects which lie only in the intermediate zone.

From the standpoint of dosage, as related to insect susceptibilities, three general fly test conditions may be imagined. One is to set up spray conditions that give different individual doses at random to each insect. The variation in individual doses may be greater than the variation in individual fly susceptibility but it must be reproducible from test to test within the limits of sampling error. In the Peet-Grady method, this variation is not within the limits of sampling error for two consecutive tests. Results would still be limited in sensitivity as described above if the variation were within the limits of sampling error.

Results of this kind are apparently the type reported by Murray (11) when he found homogeneity in the Peet-Grady method. Evidently, the

(*Turn to Page* 125)



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INSECTICIDE DISPERSION...

A new method of dispersing pyrethrum and rotenone in air

By W. N. Sullivan, L. D. Goodhue and J. H. Fales

Bureau of Entomology and Plant Quarantine, U.S.D.A.

THE development of methods for the rapid vaporization or dispersion of relatively nonvolatile insecticides would broaden the range of materials that could be used as fumigants. Considerable progress has already been made with methods of vaporizing nicotine (1, 5, 7, 8), and other insecticides such as pyrethrum (4, 6) and derris (6) can render an atmosphere toxic if the proper method of dispersion is used. Recently Goodhue and Sullivan (3) found that smoke from burning derris and pyrethrum had considerable fumigating action on the housefly, but that the burning destroyed a large portion of the material before it could be dispersed. A better method of dispersion was therefore sought.

In preliminary tests several methods were tried. Solutions of derris and pyrethrum in different solvents produced some toxic vapors when boiled rapidly on an electric hot plate, but pure rotenone sprinkled on a hot surface was more effective. Later, solutions of both rotenone and pyrethrum oleoresin, in different solvents, were slowly dropped on a hot surface, and much better results were obtained. There was considerable spattering, but this difficulty was overcome by directing a spray of the solution against the heated surface. The effect on the housefly of pure rotenone and pyrethrum oleoresin when applied in this manner has been investigated, and the results are reported in this paper.

Materials and Methods

SAFROL was chosen as the solvent, because it appeared to have the most desirable properties of any tried in the preliminary tests. Although it has a somewhat objectionable aromatic odor, it is a good solvent for rotenone and pyrethrum, and since its boiling point is high, a copious fog, or aerosol, is produced. One solution contained 2 g. of rotenone per 100 cc. and the other 2 g. of commercial pyrethrum oleoresin having a total pyrethrin content of 25.1 per cent according to the manufacturer's analysis. For some tests the two solutions were mixed in equal volumes.

The dispersion apparatus (figs. 1 and 2) consisted of a small nazal-type atomizer with the nozzle mounted 7 inches above the center of an electric hot plate held at approximately 375° C. A small electric pump was used to maintain the air pressure.

The toxicity tests were made in an 1,100-cubic-foot furnished room held at 28°-30° C. Approximately 150 houseflies were liberated in the room, and 10 cc. of solution containing 200 mg. of insecticidal material was sprayed for each test. After 10 minutes the knockdown was estimated, but the flies were given an exposure of 1 hour. The flies were then collected in cages and fed, and after 48 and 72 hours counts were made in the usual manner (2).

Results

THE results are shown in Table 1. It is obvious that both rotenone and pyrethrum are very effective against the housefly when applied in this manner. A combination of the two materials was also strikingly effective. The effect of safrol alone was slight, but there is a possibility of synergistic action when it is used with rotenone and pyrethrum, either alone or together. The knockdown obtained with pyrethrum and with a combination of rotenone and pyrethrum was satisfactory. The rotenone gave a poor 10-minute knockdown, but most of the flies were down after one-half hour. There was no visible deposit from the aerosol, but the odor was quite noticeable.

Table 1.—Effectiveness against the housefly of safrol solutions of rotenone and pyrethrum oleoresin in aerosol form. Results of two tests of about 150 flies each using a 1-hour exposure period.

Insecticidal material	*Knockdown in 10 minutes*	*Mortality after 48 hours*	*Mortality after 72 hours*
	Per cent	*Per cent*	*Per cent*
Pyrethrum oleoresin	100	72	74
Rotenone	15	65	83
Pyrethrum oleoresin and rotenone (50-50)	90	81	95
Safrol only	15	10	14
Untreated check	—	4	4

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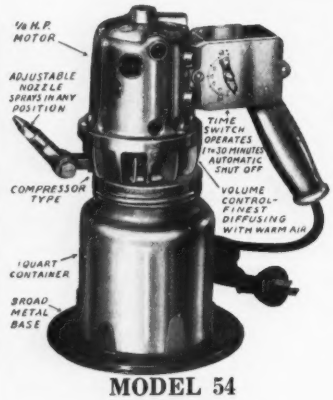

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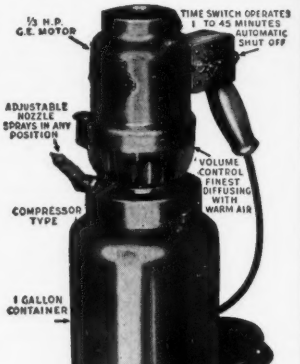

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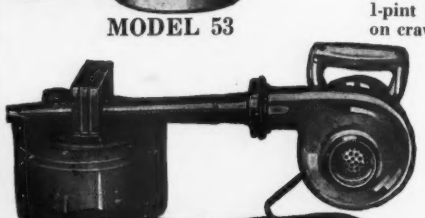

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Figure 1.—Dispersing insecticides in aerosol form by spraying on a hot plate. The photograph was taken while a strong wind was blowing.

Supplementary Tests

ABOUT 500 adult *Culex* mosquitoes from 2 to 3 days old were placed in screened cages within a 1,100-cubic-foot room and subjected for 10 minutes to the aerosol produced by spraying a solution of pyrethrum oleoresin on a hot plate (375° C.). For this work 20 cc. of solution containing 100 mg. of pyrethrins I and II in ethyl alcohol was used. Carbon dioxide under pressure was used in the atomization to reduce the fire hazard and the formation of aldehydes.

All mosquitoes subjected to this treatment were down within five minutes, and none again became normal. After 48 hours 99 per cent of the mosquitoes were dead. The untreated checks showed a 1 per cent mortality over the same period. The adult mosquito was very much less resistant than the housefly in tests with this material. Moreover, the female appeared to be more resistant than the male, since only females were found alive. The possibility of use of this method for the control of tropical mosquitoes within aeroplanes is suggested.

In tests against large nymphs and adults of the American cockroach, rotenone and pyrethrum when applied in this form gave little or no mortality.

Discussion

THE manner in which dispersion is accomplished when a solution of rotenone or pyrethrum is sprayed on a hot surface has not been definitely determined. It appears that, upon coming in contact with the hot surface, the solution disintegrates explosively owing to the sudden formation of vapor. Since the insecticide is already in a molecular dispersion in the solvent, it could easily be reduced to colloidal dimensions mechanically. If the insecticide is volatile enough, some of it may vaporize and condense again in the form of colloidal particles, but this is not believed to be necessary. Under the right conditions rotenone and pyrethrum oleoresin are completely dispersed at the hot surface without leaving any deposit of carbonized material.

The possibility of a chemical change cannot be excluded, but, judging from the amount of material required, it would appear that very little of the insecticide is rendered nontoxic. With materials easily decomposed by heat this method would not be applicable.

With respect to the amount of material required, the method of spraying on a hot surface is much superior to dispersion by burning. To obtain the same mortality with houseflies the burning method requires about 20 times as much material. The new method has not been directly compared with simple spraying, but the indications are that considerably less material is needed.

Besides requiring less material this method has further advantages. Under favorable conditions the insecticide will remain in suspension in air for several hours. Less solvent is required, and since the amount of insecticide is very small, the deposit is reduced to practically nothing. The toxic action is accelerated by the production of a high concentration in a very short time. This method greatly

Figure 2.—The very fine smoke or mist formed when a safrol solution of rotenone is sprayed on a hot plate.

broadens the choice of materials that can be used as fumigants, and also makes possible the use of old insecticides in new situations.

Summary

AN AEROSOL produced by spraying safrol solutions of rotenone and pyrethrum oleoresin, alone and in combination, on a hot plate at 375° C. was tested against the housefly. The test flies were liberated in a 1,100-cubic-foot room and subjected to 1-hour exposure. In no test was a mortality of less than 74 per cent obtained after 72 hours, and with the rotenone-pyrethrum mixture a kill of 95 per cent was obtained. However, similar tests with the American cockroach showed little or no toxic effect. A mortality of 99 per cent was obtained when adult *Culex* mosquitoes were exposed for 10 minutes to the aerosol produced in a similar way from an ethyl alcohol solution of the pyrethrum.

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Errors in Peet-Grady Test

(*From Page* 119)

spray conditions, the test technique and insect susceptibilities were such that the variation of the individual doses of the successive tests was nearly the same. Thus at times results can be fairly close, but even so are still subject to limitations in sensitivity. That these findings of homogeneity have not been confirmed by other laboratories and have not been duplicated in this one is an indication that the type of variation herein described is more representative of that likely to be experienced in the different laboratories making these tests.

A second set of conditions may be outlined. In this case, spray conditions should be set up that have a variation in individual dose, but with the restriction that this variation be equal to or less than the variation in inherent fly susceptibilities. That is, if the strongest fly is twice as strong as the weakest, measured in terms of the least amount of spray necessary to produce a kill, then the maximum variation in individual doses should be somewhat less than 200 per cent. This method would be entirely satisfactory if the doses were applied at random to test insects and could be demonstrably relied upon to give reproducible results within the limits of sampling error. If these conditions can be achieved in the Peet-Grady chamber the test will be satisfactory so far as dose is concerned. Whether or not it is possible to do so, and what revision in testing and spraying equipment and technique would be necessary, is beyond the scope of the present report. At least the colorimetric method can be used to determine whether or not changes are accomplishing the desired result. It can also be used to determine what the limits of fly susceptibilities actually are under given spray conditions.

The third type of test is one where spray conditions are such that the same individual dose can be applied to each insect. The results of this method would depend only upon the true variability in the inherent susceptibility of the insects tested. This type of test, and the one previously described, would give equally good results so far as dosage is concerned. In the opinion of the writer, such a test as this is not possible under Peet-Grady conditions, but would require the development of some other type of biological test.

Summary

A method has been described for the determination of individual fly doses in tests using liquid insecticides. A fundamental error in the Peet-Grady method has been exposed. The variation in average fly dose and per cent kill is of the same magnitude as if the operator did not measure the amount of insecticide sprayed into the chamber, but took at random anywhere from 12 to 36 cc. of spray for each test. The effect of this error on the reproducibility of results, the sensitivity of the test, and on the paired test procedure has been analyzed. The basic assumption of the use of a test insecticide in the present Peet-Grady method has been proved invalid, and the use of a grading system has been questioned. The possibility of uniform dosage has been discussed from a theoretical viewpoint.

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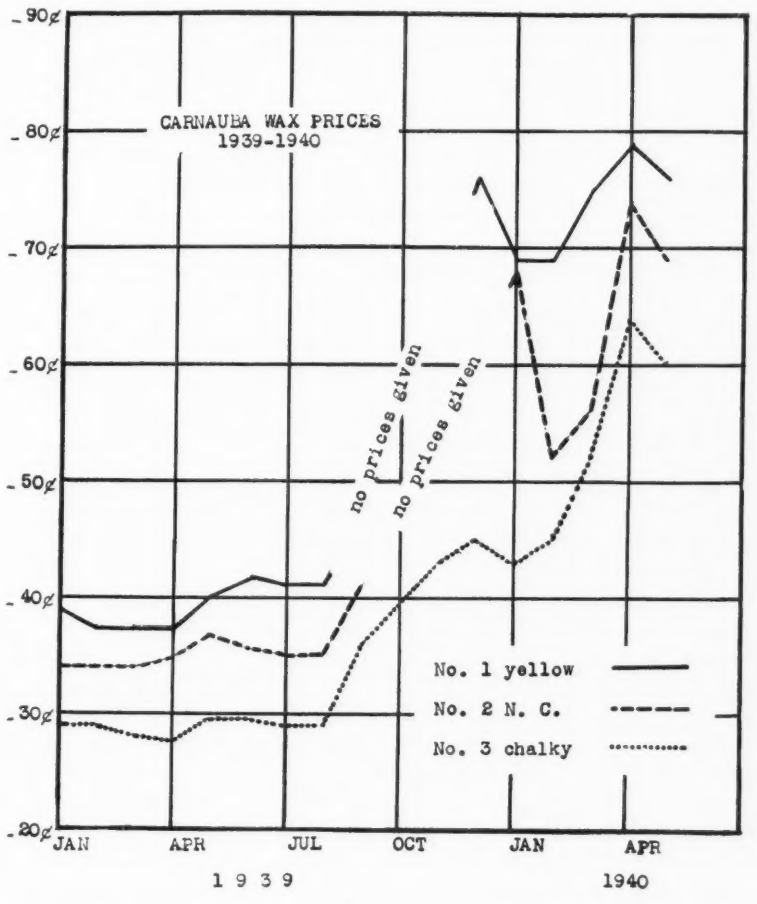
What of CARNAUBA PRICES?

AN unusual combination of factors, many of which are somewhat obscure, tend to complicate the present outlook on the carnauba wax situation. Since the early summer of 1939 when prices on all grades of carnauba wax started to climb, gradually at first and later with ever increasing sharpness, until last month, quotations have risen to the highest level in over twenty years. This, of course, is a matter of record. And the primary reasons behind this meteoric rise in prices are in general widely known. That is, unseasonal rainfalls in Brazil last year at a time when dry weather was needed for producing crops large enough to supply the growing demand in the United States resulted in a late crop of the yellow grades which was reported to be short.

Interference with shipping following the outbreak of the war has been another important factor in boosting prices to record levels. These factors alone, however, probably would not have had such a strong influence on the price advance if consumers had not allowed their stocks to be practically depleted while hoping for a price reduction which never occurred. According to one large importer of carnauba wax in the metropolitan area, consumers have to a great extent brought the present situation upon themselves. Instead of spacing their orders for future contracts over a period of months when the prices were at a more normal level, the majority of consumers waited until the drastic advance was established and then sent in such large orders that the prices were sent up still more sharply in the ensuing buyers' panic. The panic could have been largely prevented, he believed, by keeping inventories at a point where users would be protected from emergency buying.



It was expected at the outbreak of the war that the European countries would withdraw almost completely as a market for carnauba wax. Apparently this has not been the case. Reports from several sources show that more, instead of less, carnauba wax is going to Europe than before the war started. Incidentally European users have been active buyers over the past six months in the American market. Perhaps as such as 2,000,000 pounds of carnauba wax received here from Brazil during that period has not gone into domestic consumption, but has been re-exported. This has been an additional factor responsible for keeping prices high.

Thus it can be seen that every factor contributing to the entire picture, including increased shipping costs and higher insurance rates, has pushed quotations upward,—too high in the opinion of some observers. It is believed in some quarters that prices are much higher than they should be even when everything is taken into consideration. Brazilian interests, in the opinion of one wax manufacturer, have possibly taken advantage of the increased demand to control prices. As it is a monopoly market in Brazil, with no competition from any other source, artificially high prices could be maintained.

How are the current prices affecting the wax manufacturer? And what effect are they having on prices of finished products such as no-rub

floor waxes, shoe polishes, etc.? In the New York metropolitan area manufacturers have generally maintained prices on their finished products at about the same levels as were being quoted before prices on their most important raw materials advanced so sharply. In some cases manufacturers have been able to keep prices down by reason of the fact that they still have sufficient stocks of carnauba wax which were purchased when the price was about one-half of the current figure. Other manufacturers have been forced to change their formulas by using the cheaper grades of carnauba wax to replace yellow waxes or by cutting down on the percentage of carnauba wax and substituting for it less expensive and inferior waxes. Candelilla is widely used as an adulterant to help balance costs, although its properties do not recommend it as a principal ingredient of floor waxes. However, one manufacturer claimed that after reducing the percentage of carnauba in his floor wax he was able to develop a product which compared very favorably with his old product. He predicted that even should the price of carnauba be reduced in the near future, a great many small manufacturers will continue to make products containing less carnauba than they did formerly and that this would eventually injure the market by cutting down on demand.

Still other floor wax manufacturers who have not raised prices on their finished products may actually be selling at a loss or at what amounts to cost prices in the hope of striking an average long-run cost figure which will enable them to show a profit providing carnauba wax prices fall to a more normal level in the near future. Just what the trend will be from now on is a question upon which opinions vary considerably. Over recent weeks the market has dropped to somewhat lower levels under the influence of general weakness in all commodity markets. There is no prospect of any real return to a condition approaching normal, however, before September or October of this year. Most importers believed that prices will remain approximately at their present levels until reports are received from Brazil on the new crop.

It is interesting to note that government bids have varied only slightly on floor waxes during the past year in spite of a 100 per cent variation in price of the principal raw material. To select but a few random examples: a year ago, a low bid of 37.5 cents per gallon on 500 gallons of floor wax was submitted to the U. S. government; a month ago, a low bidder offered 14,500 gallons of liquid floor wax at 33.5 cents per gallon. In January, 1939, 8.9 cents a pound was a low bid on 450 lbs. of floor wax; in May, 1940, 8.92 cents a pound was a low bid on 4,020 lbs. of floor wax. Such quotations seem to indicate very clearly that selling prices of finished waxes have not yet even begun to reflect changes in raw material costs.

Resistance of wax buyers to price advances has been a hard factor for sellers to overcome. The average hard-boiled buyer has heard about raw material shortages before, —synthetic as well as real, and in many cases is sceptical as to the valid basis for a price advance. "What is this shortage of carnauba wax, I hear about" he may say. Government statistics show that imports of carnauba wax into United States reached a total of 8,179 tons last year,—an all-time high, and that in the first quarter of 1940 they continued at an accelerated pace with arrivals of 3,508 tons. These totals compare with 1938 imports of 6,958 tons and first quarter 1939 imports of 2,589 tons. "Is this a shortage?" he can rightfully ask.

There are two or three answers to this seeming contradiction that may perhaps make the situation a little clearer. For one thing the floor wax market is growing by leaps and bounds. One manufacturer reported a 72 per cent increase in sales last year as compared with 1938 and indicated that perhaps total sales of the whole industry had advanced as much as 20 per cent. Even a record import total can still be insufficient to supply a market that is growing as rapidly as this one seems to be.

There is the added point that not all of American imports, as indicated previously, have gone to provision the American market. European users have been active buyers in the American market over the past six months and some of our receipts have simply been re-exported. Figures are not reported separately by the U. S. Bureau of the Census on carnauba wax re-exports as such, these being grouped under the general heading, Vegetable Tallows and Waxes. An idea of what has been happening can be gained, however, by checking on the latter totals for recent quarters. Re-exports of vegetable tallows and waxes from the United States averaged only about half a million pounds a month for the first three quarters of 1939. In the fourth quarter, with many foreign buyers turning to the American market for supplies, our re-exports jumped to 922,000 lbs., while in the first quarter of 1940 they mounted still higher to 1,430,000 lbs. Enough carnauba has been coming into the United States, probably, to relieve the shortage, but with European buyers bidding for stocks substantial quantities are very apparently being re-exported.

There is a further peculiar point about the carnauba wax market that needs explaining. It is one of those markets where costs rise rather than fall with increased production. With growing demand, costs of gathering the wax have increased, as producers have been obliged to go farther afield in search of additional sources. The situation is similar to that in the coal industry where production costs go up as less rich fields are worked. So it is in the farming of carnauba wax, — costs must necessarily rise when the average quantity of wax that can be collected from each palm tree becomes increasingly smaller. More labor is needed to gather each pound of wax and more time is required for removing the wax from the leaves than in normal years.

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Cleveland, Ohio—J. H. Hinz Company
St. Louis, Mo.—Phil A. Sullivan Sales Co.
Los Angeles, Calif.—S. L. Abbot, Jr., Co.
Philadelphia, Pa.—Frances Patterson
Chicago, Ill.—Harry Holland & Son, Inc.
Baltimore, Md.—William McGill
San Francisco—E. M. Walls
Danbury, Conn.—J. E. Pike
Cincinnati, Ohio—E. J. Moriarty
Canada—Harrisons & Crosfield, Ltd.
Montreal, Toronto and Vancouver

causes for concern. The 1939 Philiplong range outlook point to generally higher levels on carnauba than the trade has come to accept as normal over recent years. After the current stringency has been relieved, there will no doubt be a reaction to lower levels, but whether Brazilian producers can be counted on to supply the expanding world market for carnauba wax over the long term outlook at prices previously considered to be normal is subject to serious doubt.

Furniture Polish

(*From Page* 110)

parts of water are warmed to 175°F., the triethanolamine stirred in, and the aqueous solution added gradually with stirring, to the warm oil mixture. Stirring is continued until a smooth emulsion is formed when the rest of the water, also warmed, is added. Stirring is continued while the mixture cools down. The triethanolamine soap makes a very efficient emulsifying agent. This is an expensive product since it contains roughly 10 per cent of carnauba wax. A good grade of this should be used, preferably No. 1 Yellow. The formula may be varied by combining one or more other waxes with carnauba wax, thus reducing the cost. Most products contain a much lower proportion of carnauba wax.

A commercial product very low in waxes contains:

	Per Cent
Light mineral oil	56
Mixed waxes	3
Potassium stearate soap	1
Water	40

The wax mixture contains paraffin and carnauba wax, a combination frequently found in various types of polishes. Many people attribute special virtues to waxes and so some manufacturers include a small, in some cases minute, proportion of wax so that the product can be labelled as containing wax. A good wax emulsion is no doubt a very fine polish when it contains enough wax to give a lasting luster but not enough to make application difficult.

Liquid and paste wax polishes differ from emulsions in that the former contain no water. They are essentially the same whether a floor wax, or furniture polish. The liquids contain enough organic solvent to make them fluid. The liquid usually contains 5-8 per cent of wax in a petroleum thinner. The wax is frequently a 1:1 mixture of paraffin and carnauba wax. The solids settle to the bottom of the container since they do not dissolve and there is nothing to keep them in suspension. This sludge of wax has to be mixed in by shaking when the product is used. With this a wax film of substantial thickness is obtained which should be hard and non-sticky. In general the finest quality of furniture is apt to be kept up with liquid or paste wax.

A commercial paste wax typical of these products contains:

	Per Cent
Petroleum naphtha	74
Mixed waxes	26

The waxes consist of approximately 25 per cent carnauba wax and 75 per cent of paraffin. Preparation is extremely simple, the waxes being melted together and the naphtha stirred in warm. When homogeneous, the mass is cooled quickly with stirring. As it cools the waxes crystallize out from the warm solution. The texture of the wax depends on the manner of cooling; the quicker the cooling such as with a cold-water jacket, the finer the grain of the crystalline wax. The mixture is run into containers just before it is ready to "set." Admixture of a soft wax such as paraffin with the hard carnauba wax gives better spreading power than when carnauba is used alone.

Patents sometimes list a mixture of four or more waxes in one polish but these need not be taken too seriously. A complicated formula is not necessarily any better than a simple one, provided the underlying principles are observed. Many advantages remain on the side of simplicity.

Oil Markets and War

(*From Page* 35)

pine copra crop was the heaviest on record for the past ten years and prices have consequently hovered at abnormally low levels over recent months. Not even the war scare nor higher freight rates have resulted in any appreciable price advance. Word has just come out that ocean freights will be advanced $1.50 a ton on shipments from the Philippines on cargoes which clear after June 15th, but even this announcement has had but little effect on future prices. Philippine coconut oil holds in the neighborhood of 3¼c per pound, and with the situation on other soap oils so fraught with serious complications it would look like a smart move for the American soaper to have an anchor out to windward at this point in the form of a substantial holding of this important soap oil.

Effectiveness of Rotenone

The efficiency against doryphora larvae of good mixtures containing 15 per cent of cube or derris root is practically as great as the efficiency of pure cube powder and there is no advantage in exceeding this figure. Calcium carbonate, carbonated talc, sulfur, plaster and even kaolin are better carriers of the powder than silica, bentonite and especially calcium oxide or lime. Rotenone powder, pure or mixed with a carrier, retains its insecticidal power almost fully for more than a year, not only in a closed container but even after exposure to air, light, moisture and inclement weather. J. Feytaud and P. de Lapparent. *Compt. rend. acad. agr. France* **25,** 1039-44; through Chem. Abs.

New Antiseptic

Amyl meta-cresol is a powerful antiseptic now offered by Bayer Products, Ltd., in Europe. The substance is a yellow liquid with a mild, rather fresh and not unpleasant odor. Its toxicity is low while its phenol coefficient is stated to be 240. The substance is only slightly soluble in water so that it is first dissolved in alcohol or other suitable organic solvent. The antiseptic may be incorporated in various toilet preparations to prevent the growth of bacteria and moulds, or it may be used as an antiseptic on the skin. *Perfumery & Essential Oil Record* **31,** 132 (1940).

News.....

Opitz Using Cartoon Books

John Opitz, Inc., Long Island City, N. Y., is currently conducting a radio and newspaper advertising drive on its line of "J-O" insecticides, featuring a premium offer of four "J-O" movie books. The books are made up of a series of animated cartoons, in which a list of insect pests taking leading rolls. When the pages are flipped this produces a moving picture effect.

To Make Weed-Killers

R. N. Chipman Co. has just been formed in Portland, Ore., and will shortly open a plant at 2449 N. W. Twenty-ninth Ave., for the production of agricultural and technical chemicals including a line of weed-killers, according to an announcement made recently by R. N. Chipman, president of the company. The company's products will include chlor-arsenite, metachlorate, pyroarsenic acid, turf chlorate, dry soda arsenite and arsenate chromate compound. The plant is expected to be in operation by June 15. Mr. Chipman, founder and former president of the Chipman Chemical Co., Bound Brook, N. J., relinquished his holdings in that company several months ago.

Offer New Floor Product

American Asphalt Paint Co., Chicago, has recently brought out a new formulation for treating unfinished wood floors, "Valdura Floor Sealer." Only one coat of the new product, it is said, is needed to achieve a waxed and polished surface on unfinished wood. A coverage of about 800 square feet to the gallon is claimed.

Mrs. Robert Wotherspoon Dies

Mrs. Robert Wotherspoon, whose husband is the chemist in charge of production for Derris Inc., and Orbis Products Co., New York, died suddenly May 11 of a heart attack. She had been ill for some time, but had been thought to be on the way to recovery. The Wotherspoon's home was in East Orange, N. J.

Opens New Laboratories

Chloramine Co., New York, has recently opened its new laboratories for bacteriological research at 101 Park Ave. The laboratories will specialize in the testing of antiseptics, disinfectants and fungicides.

Fire at Insecticide Plant

Considerable damage to equipment resulted from a fire which occurred recently at the Milwaukee plant of Agicide Laboratories, Inc., insecticide manufacturers. Considerable stocks of baled derris root were destroyed in the fire which started in the grinding room, but it was prevented from spreading to the laboratories and offices and was quickly brought under control. A temporary plant was immediately established to take over operations and within twelve days after the fire it went into production. Replacement stocks of raw materials were brought in from the company plant in Los Angeles so that operations could be continued with a minimum of interruption.

Develop Pyrethrum Harvester

A movement on foot to foster the production of pyrethrum in the United States received some encouragement recently with the development of a mechanical harvester for pyrethrum flowers. The machine, which is described as a combination of a corn-binder and a mechanical cotton-picker having revolving rolls for stripping the plants of mature flowers, is expected, in some quarters, to reduce the cost of production to such a point that interests in the U. S. A. may be encouraged to go into the pyrethrum business on a commercial scale. The Bureau of Agricultural Engineering together with the Bureau of Plant Industry developed the machine under the direction of A. F. Sievers, senior biochemist of the division of drugs and related plants. The harvester has been tried successfully on experimental pyrethrum plantings in various

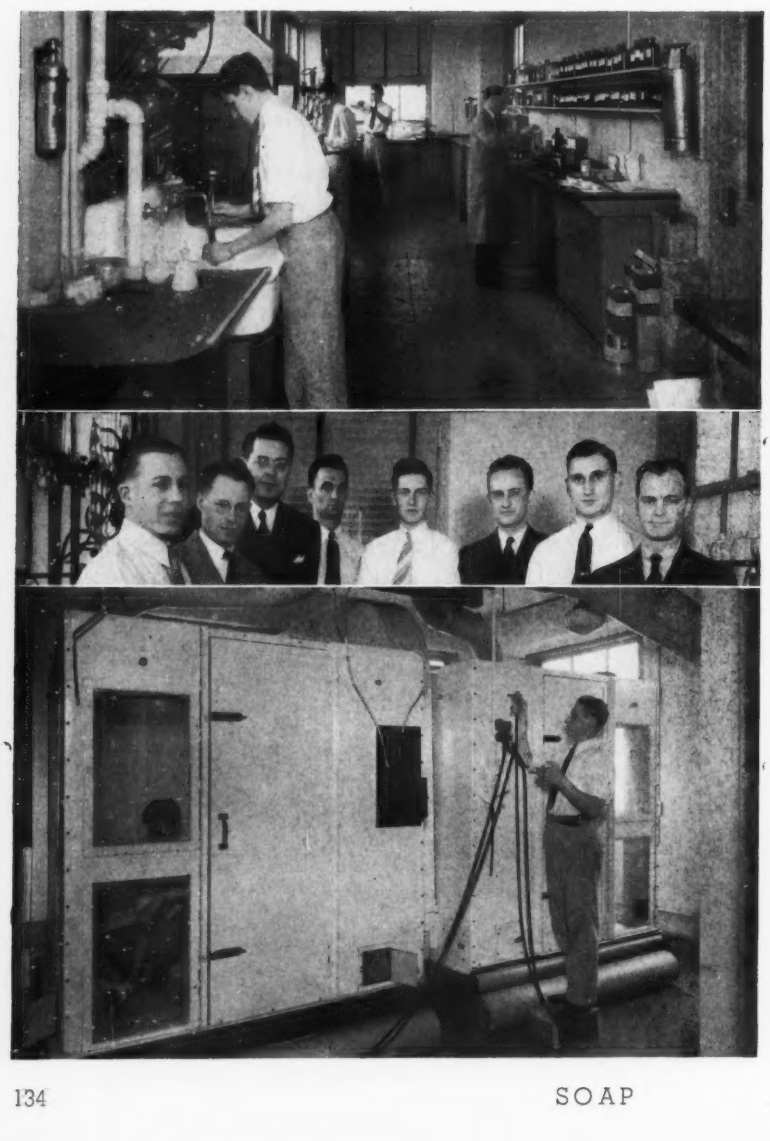
Among the exhibitors at the New Jersey Hotel Men's convention held recently at Atlantic City, N. J., was R. M. Hollingshead Corp. of Camden. Pictured in the Hollingshead booth are (left to right) a representative of the Hollingshead advertising agency; J. P. Scully, Hollingshead purchasing agent; William Plowfield, director of sales; Marie P. Du Bin, Philadelphia representative; and Charles Sullivan, N. J. representative.

parts of the country, including a tract of 100 acres grown in Pennsylvania by Standard Oil Co. of N. J.; it is now in Oregon and will be used to harvest a test planting in Colorado this summer. Specifications for the machine will be released in the near future but it is probable that the cost will be too high for individual farmers and that it will be practical only if pyrethrum is produced in large tracts by some industrial interest or by a farmers' cooperative organization. At present, however, the Department of Agriculture knows of no plans for any such pyrethrum production on a commercial scale.

New Carnauba Substitute

A new liquid wax suitable as a substitute for carnauba wax in floor waxes and other wax polishes has been announced by Fuld Brothers, Baltimore. The new product, called "Synthax" by the manufacturer, is stated to answer the requirements of carnauba such as high-lustre, long wear and non-slip features. Raw materials for the new wax are little affected by foreign market conditions, Fuld Brothers state, and a constant market price can be established well below the normal level for polishing waxes. The new material is the result of several years research. Full commercial production is anticipated at an early date, according to the announcement.

Views of the new laboratories of John Powell & Co., New York, recently completed. Top is the chemical laboratory, and below the new dual Peet-Grady installation. In the center is the technical staff: left to right, Walter Weitner, George Hertz, William J. Haude, Mason Woolford, Jr., John Stoddard, Dr. F. M. Snyder, Horst Dammrich, and Dr. Alfred Weed. Others not present when the picture was taken are D. G. Hoyer and George Glasgow.



Discuss Termite Control

Termite infestations and appropriate methods for termite control are discussed fully in an article in the April 15 issue of *Consumers' Guide*, a publication of the U. S. Dept. of Agriculture, Washington.

Plan N.P.C.A. Convention

Plans are now in preparation for the eighth annual convention of the National Pest Control Association to be held at the Claypool Hotel, Indianapolis, on October 28, 29 and 30. Discussions of the technical and business problems of the industry and a large group of commercial and educational exhibits will be included in the program. General chairman of the convention is L. A. McKenna of Cleveland. Indianapolis arrangements are in charge of E. H. Arnott, who will be assisted by J. E. Nichols and Mrs. E. E. Edwards. Convention committee chairmen are as follows: Mrs. E. E. Arnott, Indianapolis, ladies; E. E. Edwards, Indianapolis, booths and advertising; G. A. Spellios, Indianapolis, reception; C. O. Partlow, Lafayette, entertainment; Maurice Bailie, South Bend, attendance and registration; Martin Meyer, Philadelphia, travel and transportation; and J. J. Davis, Lafayette, publicity.

Kessler Reorganizes

Kessler Chemical Corp., formerly a subsidiary of American Commercial Alcohol Corp., New York, has recently been reorganized under the name of Kessler Chemical Co., incorporated in Pennsylvania. Fred E. Loud is president of the new company, L. W. Wasum is vice-president and technical director, J. R. Tompkins is secretary, and David Levin is treasurer. W. W. Angus, Inc., will act as sales agents for Kessler in the New York district. The new company will no longer manufacture "Kesscocide" insecticide concentrate, formerly made by Kessler Chemical Corp.

Amend N. Y. Sanitary Code

The Department of Health of the City of New York has just announced the adoption of a complete new section in the Sanitary Code replacing the present Article 8 which concerns "Drugs, Devices and Cosmetics". The new regulations will become effective as of July 1, 1940. Among other materials Article 8 governs the sale and distribution of poisons.

Neville Offer Tar Acids

Neville Co., Pittsburgh, manufacturers of coal-tar products, report that they are now manufacturing 15 per cent, 18 per cent and 25 per cent frozen tar acid oils for use in the manufacture of disinfectants of coefficients 3, 4 and 5.

Insecticide Stipulation

Lilly Products Co., Attleboro, Mass., insecticide manufacturer, has entered into a stipulation with the Federal Trade Commission to cease selling its insecticides in containers similar to those used by a competitor. The commission charges that Lilly Products Co. sold its "Ant Cups" in packages similar in appearance to those containing "Ant Buttons" sold by Harris Products Co., Miami, and that the resulting tendency was for purchasers to confuse the two products.

PCO Report Paid Scalise

In connection with the investigation in New York last month by State District Attorney Dewey of extortion and racketeering methods allegedly practiced by George Scalise, president of the Building Service Employees' International Union, it was reported in metropolitan newspapers that $9,000 had been paid to the union by the New York Pest Control Association. Officials of the Association denied the charge, pointing out that the association was not even in existence at the time the alleged payment was made. They indicated that payments had quite possibly been extorted from several members of the industry at the time of the 1936 strike of pest control operators.

Huntington Laboratories takes a jab at those who win public contracts at too-low prices. Facsimile of a blotter recently mailed out by the company to buyers of sanitary supplies.

Tennant In New Quarters

G. H. Tennant Co., Minneapolis, floor products, has just moved into a new and larger plant at 2530 Second Street North.

Quinlan Co. Changes Name

Quinlan Co., sanitary chemical manufacturers, formerly of 35 E. Wacker Drive, Chicago, have recently moved to 1123 S. Western Ave. The new name of the company is Chemical Producers.

Proprietary Assn. Meets

The annual meeting of the Proprietary Association of America was held at the Hotel Biltmore, New York, May 20-22. Among the section chairmen in charge of the various group meetings were Dr. George F. Reddish of Lambert Pharmacal Co., chairman of the scientific section, and H. M. Clark, Dr. Hess & Clark, Ashland, Ohio, chairman of the veterinary section. Dr. Reddish addressed the scientific section on "A Bacteriologic Method for Testing Antiseptic Chewing Gum."

Sanitary Supply Assn. Meets

Louis Herzog of Riddiford Bros. Co., Chicago, was re-elected president of the National Sanitary Supply Association at the 18th annual meeting held at the Hotel Cleveland, Ohio, May 20, 21 and 22. Marshall L. Magee of T. F. Washburn Co., Chicago, was named vice-president, and S. J. Bockstanz, Bockstanz Bros. Co., Detroit, treasurer. E. C. Kratsch, Milwaukee, was re-elected secretary. Among the addresses at the business sessions were the following: "Modern Ideas in Floor Maintenance" by M. Flanagan, Federal Varnish Co., Chicago; "Protective Wall Coatings" by Robert Hoffman, Bergonize Co., Chicago; "Building Up Your Liquid Soap Dispenser Business" by Martin Peters, Moore Bros. Co., New York; "Products Insurance for the Sanitary Supply House" by Dean Parker, Traveler's Insurance Co., Cleveland; "Economies in Building Maintenance" by Harold S. Malm, Cleveland, Arcade; and "The Maintenance of Metals" by Arthur L. Perkins, Pynosol Co., New York.

Jay H. Zucker, head of the State Chemical Mfg. Co., Cleveland, acted as chairman of the convention committee, and arranged an interesting social program to supplement the business sessions. It included a stag party the evening of May 20th and the annual banquet the following night. On the afternoon of May 22nd the group made a tour through the plant of State Chemical & Mfg. Co.

Exhibitors in the supply show which was a feature of the convention included the following: Agricultural Laboratories, Inc.; Armour & Co.; Bergonize Co.; Candy & Co.; Davies-Young Soap Co.; Detergent Products Corp.; A. F. Dormeyer Mfg. Co.; Fuld Bros.; Greenview Mfg. Co.; Hercules Powder Co.; Herz Cup Co.; R. M. Hollingshead Corp.; Hysan Products Co.; S. C. Lawlor Co.; F. H. Lawson Co.; Loroco Industries, Inc.; M. & C. Maintenance Co.; Moore Bros. Co.; Palmer Products, Inc.; Pynosol Laboratories; Southern Mills Corp.; Tu-Way Products Co.; T. F. Washburn Co.; and White Mop Wringer Co.

Insecticide Stipulation

Buhach Producing & Mfg. Co., Stockton, California, insecticide distributors, have entered into a stipulation with the Federal Trade Commission in which they agree to cease making certain claims for an insecticide known as "Buhach." They have agreed to cease advertising that the preparation is effective in killing all species of moths or all insect pests. They will discontinue using the words "get rid of" or "banish" or other phrases meaning that "Buhach" will kill or repel ants or roaches.

C. L. Fardwell Reelected

C. L. Fardwell, sales manager of McCormick & Co., manufacturers of insecticides, Baltimore, has been reelected president of the Maryland division of Travelers' Protective Association of America.

Exhibit at Health Show

Soaps and disinfectants for the athlete and cleaning materials for the gymnasium were displayed by various manufacturers at the annual convention of the American Association for Health, Physical Education and Recreation in Chicago last month. Hillyard Sales Co., distributors for Hillyard Chemical Co., St. Joseph, Mo., exhibited "Velva-San" liquid soaps for shower rooms, "Sani-Septo" surgical soap, "Pine-O-Cide" germicide, "Hi-Ko" disinfectant for athlete's foot and for swimming pools, and other products. Elliott C. Spratt of the company's sales staff, supervised the presentation. Huntington Laboratories, Inc., Huntington, Ind., concentrated on a display of one product from their extensive line of sanitary products—"Seal-O-San" for gym floor maintenance. President J. L. Brenn of the company was in personal charge. Vestal Chemical Laboratories, Inc., St. Louis, promoted "Briten-All" cleaner for floors, "Vesta-Gloss" floor protector and various wood sealers, as well as the "Vestal" floor machine for scrubbing, waxing and polishing. Sales manager F. C. Freesmeier directed the exhibit. Still another exhibitor, Mer-Kil Chemical Products Co., Chicago, featured "Merkocide," a fungicide for treatment of athlete's foot.

Roberson Joins Penn. Refining

V. L. Roberson has recently joined Pennsylvania Refining Co., Butler, Pa., as sales manager of the specialties division. In his new position Mr. Roberson will be in charge of sales of white oil, "Insecti-sol" and similar products. Mr. Roberson was formerly connected with Sherwood Petroleum Co. and has had more than ten years' experience in marketing petroleum products.

V. L. Roberson

Tar Acid Imports Up 190%

Importations of tar acids containing proportionately large amounts of high-boiling phenols and certain other distillates in 1939 were almost three times the 1938 figure, according to a report prepared by J. N. Taylor of the chemical division, Department of Commerce, Washington, D. C. Incoming shipments of tar acids during 1939 amounted to 71,140,328 lbs., valued at $1,442,382 as compared with 27,660,290 lbs., valued at $321,326 during 1938.

Issue Bulletin on Derris

The production and marketing of derris root are reviewed quite thoroughly in a 24-page bulletin just issued by the U. S. Dept. of Agriculture. The bulletin was compiled by A. F. Sievers, senior biochemist, Division of Drug and Related Plants, Bureau of Plant Industry. It describes the species of derris, countries where grown, range of rotenone and total extractives obtained, methods of cultivation and harvesting, preparation for market and use. Export statistics from producing countries are included, along with a list of over 150 references.

The May poster used by American Can Company on its hundreds of "Canco" trucks operating throughout the country last month urged readers to buy a can of insecticide. The subject of these color posters is changed each month to feature a new item in the line of products packed in "Canco" containers. The campaign is designed to build more sales for can users, while at the same time building good will for American Can.

A. H. P. Profits Up

American Home Products, Jersey City, manufacturers of household specialties, reported a net income for the quarter ended March 31, 1940, of $1.234,116, or $1.54 a share. For the first quarter of 1939, the company's net income was $1,-073,610, or $1.33 a share.

Philadelphia P.C.O.'s Meet

Proposed legislation concerning cyanide fumigations was the principal subject of discussion at a meeting of the Philadelphia Pest Control Operators held recently at the Majestic Hotel. A committee composed of Martin Meyer, Sig Herman, J. T. Kavanaugh, George Brehm and W. A. Davis prepared a draft which was presented at the meeting. The authorities in Philadelphia are primarily interested in having a record of all firms engaged in cyanide fumigations and having provisions made that will permit only competent parties to engage in such operations. They are also seeking to establish standards that will insure proper precautions before, during and after the actual fumigation. W. O. Buettner, secretary of the National Pest Control Operators Association, spoke briefly on problems of price competition confronting the industry. The meeting was followed by a dinner.

Canco Insecticide Issue

A review of the history and use of insecticides is featured in the May issue of *Canco*, house magazine of American Can Co., New York.

Rotenone Dust for Pea Weevils

Rotenone dust containing ¾ of one per cent rotenone was found almost 100 per cent effective in killing pea weevils by entomologists at Oregon State College in recent tests. It must be applied when adults are depositing their eggs. The powder becomes lodged in tiny pads of fine hairs on each leg and as the insects draw these through their mouths to clean them they obtain enough poison to cause death. The weevils do little feeding in the adult stage so cannot be controlled by other common insecticides. There still remained the problem of applying the dust on large acreages, frequently swept by high winds. This was solved by construction of hoods for attachment to both sides of a motor truck. Details of the project are described in Station Circular 126, "Suggestions for Control of the Pea Weevil in Oregon."

New York PCO's Meet

A well-attended meeting of the New York Pest Control Association was held at the group's headquarters May 14 at which members saw the first eastern showing of a motion picture "Insect and Rodent Enemies of Man" produced by Henry Turrie of Milwaukee. Also included on the program was a talk by Ira A. Levine "The Field Identification of Commercial Woods" and the playing of transcribed radio broadcast records of a "Termite Review."

N.A.I.D.M. Program

(*From Page* 103)

Pyrethrum"—Alfred Weed, John Powell & Co., Inc.

"Exporting Insecticides and Disinfectants" — George C. Payne, Bureau of Foreign & Domestic Commerce, U. S. Dept. Commerce, Chicago, Ill.

SPORTS—2 P.M.—Base Ball Game.
5 P.M.—Horse-Shoe Pitching Tournament.

Tuesday—June 18, 1940

9:00 A.M.—Meeting called to order.
Research Program Report, W. B. Eddy, Rochester Germicide Co.

"Labeling Clinic"—led by Dr. E. G. Thomssen, J. R. Watkins Co.; Dr. Eric Kunz, Givaudan-Delawanna, Inc.; Henry C. Fuller, N.A.I.D.M. consultant.

"Co-operating between Enforcement Officers and Manufacturers" —Harry Garrett, Chief, Food and Drug Administration, U. S. Dept. Agriculture, Chicago.

"Insect Control," (Moving Picture)—Henry Turrie, Wil-kil, Inc.

SPORTS—2 P.M.—Annual Golf Tournament.

ENTERTAINMENT—6 P.M.—Cocktail Party.

7 P.M.—Informal Banquet and Floor Show.

Wednesday—June 19, 1940

9:00 A.M.—Meeting called to order.
"Non-volatile Solids in Wax"—Melvin Fuld, Fuld Bros.

Proposed Revisions Cresylic and Coal Tar Disinfectants—Dr. E. G. Klarmann, Lehn & Fink Products Corp.

"Sanitation Control in Dairy Operation"—Dr. G. B. Ulvin, Chief Chemist, Sidney Wanzer & Sons Dairy.

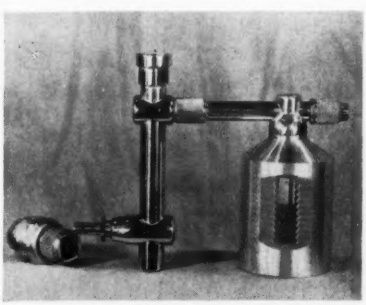
"Sanitation and Fumigation in Air Transportation"—W. W. Davies, Project Engineer, United Airlines, Chicago.

"Bioassay of Livestock Spray Using Hypnotic Doses Applied in a Spray Tunnel"—Dr. Craig Eagelson, Bureau of Entomology & Plant Quarantine, U. S. Dept. of Agriculture, Dallas, Texas.
Unfinished Business.
Final Adjournment.

Insect Control Aloft

Development of a new type of power spray gun has provided the U. S. Public Health Service with an effective weapon for use in its war on disease-bearing insects that stow away on airplanes flying into United States from Mexican, Central and South American points. The sprayer is operated by air pressure and delivers a fine "dry" spray. The pyrethrum insecticide is used mixed with four parts of a highly refined mineral oil having a relatively high flash point. Ventilators of the plane are kept closed during and approximately ten minutes after spraying. From five to ten c.c. of the insecticide are used per 1,000 cubic feet.

Recently the method of procedure for control of tropical insects on overseas planes has been revised, according to C. L. Williams, assistant surgeon general in charge of the foreign quarantine division of the U. S.



Public Health Service. Formerly all planes were sprayed in flight a half hour before reaching a U. S. port. They had also been sprayed on overnight stops after crew and passengers had left and the plane was closed for the night. The present procedure is to spray the plane at some foreign point, where it has to remain for a considerable time on water. The spraying is done just before the plane takes off and as the flight thereafter continues over water, re-infestation is believed extremely unlikely. On arriving at a U. S. airport, quarantine inspectors board the plane after passengers and crew have disembarked and make further inspections of passenger and pilot compartments.

Latest available reports covering the inspect watch service at

Miami, Fla., show that during 1938 almost 400 aircraft were inspected for possible mosquito infestation, of which 187 planes were found to harbor dead or live insects of various species. A total of 651 insects were recovered, of which 166 were alive. Among the collection were forty-five mosquitoes, of which forty were dead. No yellow-fever carriers were found on any aircraft that year. Most prevalent insects were domestic flies, with midges, gnats and other minute flies next in number.

Rotenone Determination

Details of a method of analysis of derris and cube root which has been applied satisfactorily to some thousands of samples, are given. The method, which depends on ether extraction, has been compared with the method proposed by Jones and Graham. The pure rotenone content by the former method was equal to the crude rotenone of the latter. In samples with a fineness of 80-90 per cent through a 200-mesh sieve the crude rotenone content by the Jones-Graham method was generally higher. For complete chloroform extraction of samples in which the ratio of rotenone to total ether extract exceeds 40 per cent, a greater fineness than the one given in the Jones-Graham method will be required.

The purity of the carbon tetrachloride solvate as it is obtained in the Jones-Graham method is determined by titration of the dichloroacetic acid solvate into which it has been converted, by polarization, and by alcohol recovery. Results by these three modes of determination did not differ by more than a small experimental error.

A method has been devised for determining the rotenone in the resin which has escaped estimation, involving the passage of the solution of the resin in benzene through a column of Frankonit KL. From a number of samples of resin at least 10 per cent of the original rotenone could be recovered.

Heating derris powder at 60° and 80°C. for definite periods considerably lowered the rotenone and total ether extract contents. Th. M. Meijer and D. R. Koolhaas. *Ind. Eng. Chem.*, Anal. Ed. **12,** 205-9 (1940).

A substitute is needed for thallium because of its high cost and low supply. Arsenic trioxide ground to particles of 3-5 microns (0.003-0.005 mm.) was about five times as toxic as standard-size arsenic trioxide which passes through a 100-mesh sieve. Finer grinding of zinc phosphide also increases its efficiency. High temperatures sometimes generated in grinding red squill will detoxify the powder. Many so-called attractant chemicals used in commercial baits are ineffective. Most baits and fresh foods are usually more effective than dry baits and preserved foods. Donald A. Spencer. *Peets* **7,** No. 12, 8-9.

Classified Advertising

Classified Advertising—All classified advertisements will be charged for at the rate of ten cents per word, $2.00 minimum, except those of individuals seeking employment where the rate is five cents per word, $1.00 minimum. Address all replies to Classified Advertisements with Box Number, care of *Soap*, 254 West 31st St., New York.

Positions Wanted

Insecticide Man—Man with a number of years experience in the marketing and advertising of household insecticides desires new connection in the insecticide industry in charge of sales of this and kindred products. For further details, write to Box No. 831, care *Soap*.

Chemist: Man with practical laboratory background in drugs, soaps, cosmetics, desires position in laboratory or plant of manufacturing. 28 years of age; graduate of chemistry from recognized university. For further details communicate with Box No. 834, care *Soap*.

Insecticides and Chemicals—Young man with two years experience selling agricultural insecticides, chemicals, etc., for large manufacturer desires new position in sales capacity. 26 years old, college graduate in chemistry. For further details address Box No. 832, care *Soap*.

Soapmaker-Master and Chemist, 16 years practical experience, 9 years with present firm in middlewest, desires more responsible position. Can analyze, produce and calculate all type soap, detergent, disinfectant and alkaline compounds. Specialist in high grade perfumed potash soaps, shampoos and shaving cream. Results guaranteed. California preferred. Address Box No. 836, care *Soap*.

Salesman, successful specialist selling jobbers of janitor supply and beauty-shop trade. Well versed in demonstration and use of soaps, disinfectants, wax, alkaline compounds and all type cleaners. Desires connection in the far west. Past 8 years employed by large manufacturer in Wis. Address Box No. 837, care *Soap*.

Soap Maker and Chemist with long experience in the manufacture of all kinds and grades of soaps and soap products. Address Box No. 838, care *Soap*.

Wax Emulsion Specialist—Six years experience research and manufacturing water waxes, liquid soaps, insecticides, seals, disinfectants and cleaning compounds. Address Box No. 841, care *Soap*.

Salesman: Man with following in New York City, ten years selling soaps, disinfectants, etc., to janitors and institutional supply jobbers; also hardware dealers; extensive following; desires permanent connection with reliable manufacturer. Drives car; will travel if necessary. Address Box No. 844, care *Soap*.

Soapmaker and Chemist, 20 years experience in the manufacture of all types of soaps, mottled soaps, disinfectants and janitor supplies, seeks new connection. Address Box 812, care *Soap*.

Entomologist, Ph.D.; with twenty years background in all branches of profession and broad research experience in insecticidal field, particularly with household sprays, is desirous of connection with commercial concern, which will offer advancement and other opportunities not afforded by present position. Address Box No. 817, care *Soap*.

Sales Representative: Man with following on Pacific Coast desires to represent manufacturer of fine and medicinal chemicals in that territory. For further details communicate with Box No. 848, care *Soap*.

Chemist, Ph.D.; many years practical experience in soaps, oils, fats, cosmetics, textile chemicals, etc., desires suitable connection. Address Box No. 796, care *Soap*.

Chemist—with several years experience as chief chemist of large soap and glycerine manufacturers desires superintendency of medium-sized plant. Address Box No. 794, care *Soap*.

Sales Manager; many years experience in janitor and sanitary supply field. Now employed. Qualified to manage present sales organization or to start new sales division for manufacturer or distributor. Address Box No. 849, care *Soap*.

Positions Open

Wanted—Soap Superintendent: Man with several years practical experience, capable of operating soap plant manufacturing textile and laundry soaps, is needed by well-known soap manufacturer. Give experience, education and where employed during past five years. Address Box No. 830, care *Soap*.

Wanted: Janitor supply man with good background and sales record who could manage janitor supply department wanted by large soap manufacturer. Give full details and education, experience, etc. Address Box No. 803, care *Soap*.

Miscellaneous

Machinery for Sale: Special equipment for the insecticide and disinfectant trade: Kettles in all metals and sizes, tanks, dryers, stills; mixers, liquid and paste; filters and filter presses, grinders, hammer-mills and pulverizers for all requirements; fillers—liquid, paste and powder of all types; lift trucks, skids, and factory handling equipment. Kindly send us your inquiry. Surely the largest stock of guaranteed rebuilt equipment in New York City can meet your needs. First Machinery Corp., 837 E. 9th Street, New York, N. Y.

Rebuilt Soap Machinery: Jones automatic soap press; foot presses; Proctor soap dryer; Lehmann 3 roll inclined water cooled steel roller mill; 4 roll stone mill; Johnson carton sealers; automatic powder fillers; crutchers; plodder; 6 knife chipper; cutting table; frames; filter presses; mixers; boiling kettles; etc. Send for Liquidation Bulletin No. 402. Stein Equipment Corp., 426 Broome Street, New York City.

Factories Started—remodeled. Instruction in laundry and toilet soap processes and preparations; perfumes; glycerine recovery. Address English or Spanish, Box No. 835, care *Soap.*

For Sale: 1 Garrigue glycerine single effect evaporator, 225 pounds glycerine per hour; 1 Proctor and Schwartz 3 section soap chip dryer with 1 36″ diameter chilling roll; Jones laundry automatic soap press. Priced attractively. Address Box No. 842, care *Soap.*

Wanted for User: Soap chip dryer; filter press; foot and automatic soap press; crutcher; plodder; milling roll; dry powder mixers. What have you? Address Box No. 839, care of *Soap.*

Floor Brushes—We manufacture a very complete line. Catalogue sent upon request. Flour City Brush Company, Minneapolis, Minn., or Pacific Coast Brush Co., Los Angeles, Calif.

We Want to Buy Cans—Discontinued Flit style—pints and quarts—lithographed or plain. Address Box No. 840, care *Soap.*

For Sale: 2 Proctor & Schwartz Dryers. Complete with 5 roll chilling units and 5 section drying units. Have been in continuous operation doing fine work. Buyer can inspect machines in operation. Can buy at very reasonable price for quick purchase. Address Box No. 843, care *Soap.*

Raw Materials and Equipment

NOTE: This is a classified list of the companies which advertise regularly in SOAP. It will aid you in locating advertisements of raw materials, bulk and private brand products, equipment, packaging materials, etc., in which you are particularly interested. Refer to the Index of Advertisements, page 143, for page numbers. *"Say you saw it in SOAP."*

ALKALIES

American Cyanamid & Chemical Corp.
John A. Chew, Inc.
Columbia Alkali Co.
Diamond Alkali Co.
Dow Chemical Co.
Eastern Industries
Hooker Electrochemical Co.
Innis, Speiden & Co.
Niagara Alkali Co.
Solvay Sales Corp.
Jos. Turner & Co.
Warner Chemical Co.
Welch, Holme & Clark Co.

BULK AND PRIVATE BRAND PRODUCTS

American Wax Co. (Floor Products)
Ampion Corporation (Sanitary Supplies)
Associated Chemists, Inc. (Insecticides)
Baird & McGuire, Inc. (Disinfectants)
Buckingham Wax Corp. (Wax Products)
Candy & Co. (Floor Products)
Chemical Mfg. & Dist. Co. (Soaps and Sanitary Supplies)
Chemical Supply Co. (Disinfectants, etc.)
Chicago Sanitary Prods. Co. (Sanitary Supplies)
Clifton Chemical Co. (Sanitary Supplies)
Cole Chemical Corp. (Sanitary Supplies)
Davies-Young Soap Co. (Potash Soaps)
Federal Varnish Co. (Floor Products)
Alex. C. Fergusson Co. (Disinfectants)
Fuld Bros. (Sanitary Supplies)
R. Gesell, Inc. (Specialties)
James Good, Inc. (Sanitary Supplies)
Harley Soap Co. (Soap Specialties)
Higley Chemical Co. (Floor Seal)
Hockwald Chemical Co. (Sanitary Supplies)
Hysan Products Co. (Sanitary Supplies)
Koppers Co. (Disinfectants)
Kranich Soap Co. (Potash Soaps)
M. & H. Laboratories (Floor Waxes)
Onalim Co. (Shampoos)
Pecks Products Co. (Soaps)
Philadelphia Quartz Co. (Detergents)
Reilly Tar & Chem. Co. (Floor Seals)
Geo. A. Schmidt & Co. (Soaps)
Jno. C. F. Snyder & Sons (Sweeping Compound)
Superior Soap Corp. (Soaps and Waxes)
Sweeping Compound Mfrs. Co. (Sweeping Compound)
Twin City Shellac Co. (Wax Products)
Uncle Sam Chemical Co. (Sanitary Supplies)
T. F. Washburn Co. (Floor Products)
White Tar Co. (Disinfectants, etc.)
Windsor Wax Co. (Wax Products)

CHEMICALS

American-British Chemical Supplies
American Cyanamid & Chemical Corp.
Chemical Mfg. & Dist. Co.
John A. Chew, Inc.
Columbia Alkali Co.
Cowles Detergent Co.
Diamond Alkali Co.
Dow Chemical Co.
E. I. du Pont de Nemours & Co.
Eastern Industries
General Chemical Co.
Hooker Electrochemical Co.
Industrial Chemical Sales Div.
Innis, Speiden & Co.
Monsanto Chemical Co.
Niagara Alkali Co.
Philadelphia Quartz Co.
Rohm & Haas Co.
Reilly Tar & Chemical Corp.
Solvay Sales Corp.
Standard Silicate Co.
Jos. Turner & Co.
Victor Chemical Works
Warner Chemical Co.
Welch, Holme & Clark Co.

COAL TAR RAW MATERIALS

(Cresylic Acid, Tar Acid Oil, etc.)

American-British Chemical Supplies
American Cyanamid & Chemical Corp.
Baird & McGuire, Inc.
Barrett Co.
Innis, Speiden & Co.
Koppers Co.
Mirvale Chem. Co.
Monsanto Chemical Co.
Neville Co.
Pittsburgh Coal Carbonization Co.
Reilly Tar & Chemical Co.
White Tar Co.

COLORS

Fezandie & Sperrle
Interstate Color Co.
Pylam Products Co.
Tamms Silica Co.

CONTAINERS AND CLOSURES

American Can Co. (Tin Cans and Steel Pails)
Anchor-Hocking Glass Corp. (Closures and Bottles)
Continental Can Co. (Tin Cans)
Crown Can Co.
National Can Co. (Cans)
Owens-Illinois Glass Co. (Bottles and Closures)
Williams Sealing Corp. (Closures)

DEODORIZING BLOCK HOLDERS

Clifton Chemical Co.
Fuld Bros.
Garnet Chem. Corp.
Hysan Products Co.

INSECTICIDES, SYNTHETIC

American Cyanamid & Chemical Corp.
Associated Chemists, Inc.
Dodge & Olcott Co.
Rohm & Haas Co.
U. S. Industrial Chem. Co.
Whitmire Research Corp.

MACHINERY

Eastern Engineering Co. (Mixers)
Anthony J. Fries (Soap Dies)
Houchin Machinery Co. (Soap Machinery)
Huber Machine Co. (Soap Machinery)
R. A. Jones & Co. (Automatic Soap Presses and Cartoning Machinery)
Karl Kiefer Machine Co. (Filling Machinery)
Koppers Company (Coal Tar Plants, Power Plants, Valves, Castings, Pipe, Tanks)
Mixing Equipment Co. (Tanks, Mixers)
Proctor & Schwartz (Dryers)
C. G. Sargent's Sons Corp. (Dryers)
Sprout, Waldron & Co. (Mixing, Conveying, etc.)
Stokes & Smith Co. (Pkg. Machy.)

Raw Material and Equipment Guide

NOTE: This is a classified list of the companies whichadvertise regularly in SOAP. It will aid you in locating advertisements of raw materials, bulk and private brand products, equipment, packaging materials, etc., in which you are particularly interested. Refer to the Index of Advertisements, page 143, for page numbers. *"Say you saw it in SOAP."*

MACHINERY, USED

Consolidated Products Co.
Newman Tallow & Soap Machinery Co.

MISCELLANEOUS

Adams Products, Inc. (Floor Machines)
American Standard Mfg. Co. (Wax Applicator)
Anchor-Hocking Glass Corp. (Metal Caps)
Barnsdall Tripoli Co. (Pumice—Tripoli)
Dow Chemical Co. (Germicides, Agricultural Insecticides, Fumigants)
Filtrol Corp. (Purifying and Decolorizing Clay)
General Petroleum Corp. (Naphthenic Acids)
Hercules Powder Co. (Pine Oil and Rosin)
Industrial Chemical Sales Div. (Decol. carbon, Chalk)
Innis, Speiden & Co. (Fumigants)
Koppers Company (Coal, Coke, Roofing Materials)
Lenape Trading Co. (Waxes)
Newport Industries, Inc. (Pine Oil and Rosin)
Pennsylvania Refining Co. (White Oils)
Pylam Products Co. (Lathering Agent)
Reilly Tar & Chem. Co. (Preservatives)
Steryl Prods. Corp (Toilet Deodorizer)
Tamms Silica Co. (Silica—Volcanic Ash)
Victoria Paper Mills Co. (Toilet Tissues)

OILS, FATS, AND FATTY ACIDS

T. G. Cooper & Co.
Eastern Industries
Emery Industries, Inc.
Independent Mfg. Co.
Industrial Chemical Sales Div.
Leghorn Trading Co.
Newman Tallow & Soap Machinery Co
Orbis Products Corp. (Stearic Acid)
Wecoline Products Co.
Welch, Holme & Clark Co.

PARADICHLORBENZENE

John A. Chew, Inc.
Dow Chemical Co.
E. I. du Pont de Nemours & Co.
Hooker Electrochemical Co.
Monsanto Chemical Co.
Niagara Alkali Co.
Solvay Sales Corp.
Jos. Turner & Co.

PERFUMING MATERIALS

American-British Chemical Supplies
Aromatic Products, Inc.
Arthur E. Bennett, Inc.
Compagnie Parento
Dodge & Olcott Co.
Dow Chemical Co.
P. R. Dreyer Inc.
E. I. Du Pont de Nemours & Co.
Felton Chemical Corp.
Firmenich & Co.
Fritzsche Brothers, Inc.
General Drug Co.
Givaudan-Delawanna, Inc.
L. M. Chemical Co.
Magnus, Mabee & Reynard, Inc.
Monsanto Chemical Co.
Norda Essential Oil & Chemical Co.
Orbis Products Corp.
Rifa—New York, Inc.
Ungerer & Co.
Van Ameringen-Haebler, Inc.
Albert Verley, Inc.

PETROLEUM PRODUCTS

Deodorized Insecticide Base, White Oils, Petroleum, Paraffine Oils, Residues, etc.)
Atlantic Refining Co.
Pennsylvania Refining Co.
L. Sonneborn Sons

PHOSPHATES

Trisodium, Sodium Pyrophosphate, etc.
American Cyanamid & Chemical Corp.
John A. Chew, Inc.
E. I. du Pont de Nemours & Co.
General Chemical Co.
Monsanto Chemical Works
Victor Chemical Works
Warner Chemical Co.

PYRETHRUM AND DERRIS PRODUCTS

Insect Flowers and Powder, Pyrethrum Extract, Derris Products
Associated Chemists, Inc.
Derris, Inc.
Dodge & Olcott Co.
S. B. Penick & Co.
R. J. Prentiss & Co.
McCormick & Co.
McLaughlin, Gormley, King Co.
John Powell & Co.
Whitmire Research Corp.

SILICATES

E. I. du Pont de Nemours & Co.
General Chemical Co.
Philadelphia Quartz Co.
Standard Silicate Co.

SOAP DISPENSERS

Ampion Corp.
Bobrick Mfg. Co.
Clifton Chemical Co.
Fuld Bros.
Garnet Chem. Corp.
Hockwald Chemical Co.
Presto Mfg. Co.

SPRAYERS

Breuer Electric Mfg. Co. (Electric)
Dula Manufacturing Co.
Fumeral Co. (Spraying Systems)

WAXES AND GUMS

Carnauba, Shellac, Candelilla, etc.
American Cyanamid & Chem. Corp.
T. G. Cooper & Co.
Distributing & Trading Co.
Innis, Speiden & Co. (Waxes)
Lenape Trading Co.
The Mac Lac Co.
Mantrose Corp. (Shellac)
Twin City Shellac Co. (Shellac)

Professional Directory

Official Test Insecticide...

SUPPLIES of 1940 Official Test Insecticide (O.T.I.) are available for immediate shipment to any laboratory, firm or individual from the office of the National Association of Insecticide & Disinfectant Manufacturers. The 1940 O.T.I. is required for current testing by the official Peet-Grady Method under the specifications for household insect spray of the National Bureau of Standards and the N.A.I.D.M. Further information may be obtained from the Association office.

▼

National Association of
Insecticide & Disinfectant Manufacturers, Inc.

110 East 42nd Street New York

OFFICERS

President	W. J. Zick, Stanco, Inc., New York
First Vice-President	John Curlett, McCormick & Co., Baltimore
Second Vice-President	H. A. Nelson, Chemical Supply Co., Cleveland
Treasurer	John Powell, John Powell & Co., New York
Secretary	Ira P. MacNair, MacNair-Dorland Co., N. Y.

BOARD OF GOVERNORS

Gordon M. Baird
Baird & McGuire, Inc., Holbrook, Mass.
J. L. Brenn ... Huntington Labs., Inc., Huntington, Ind.
N. J. Gothard ... Sinclair Refining Co., E. Chicago, Ind.
H. W. Hamilton ..... White Tar Co., Kearny, N. J.
Dr. E. G. Klarmann
Lehn & Fink, Inc., Bloomfield, N. J.
Wallace Thomas .... Gulf Refining Co., Pittsburgh
Dr. E. G. Thomssen J. R. Watkins Co., Winona, Minn.
Clarence Weirich C. B. Dolge Co., Westport, Conn.
R. H. Young ... Davies-Young Soap Co., Dayton, O.

Index to Advertisers

For product classification see pages 137 and 139

*For further details see announcement in 1940, SOAP BLUE BOOK

Every effort is made to keep this index free of errors, but no responsibility is assumed for any omission.

Tale Ends

TO soapers who must have olive oil, the prospect of a blockade of the Mediterranean is not pleasant to consider. Such a war measure would mean practically a cessation of shipments to this country,—and those who have been spending their good money for years preaching the virtues of olive oil as an ingredient of shampoos and soaps would not be in an enviable spot.

* * *

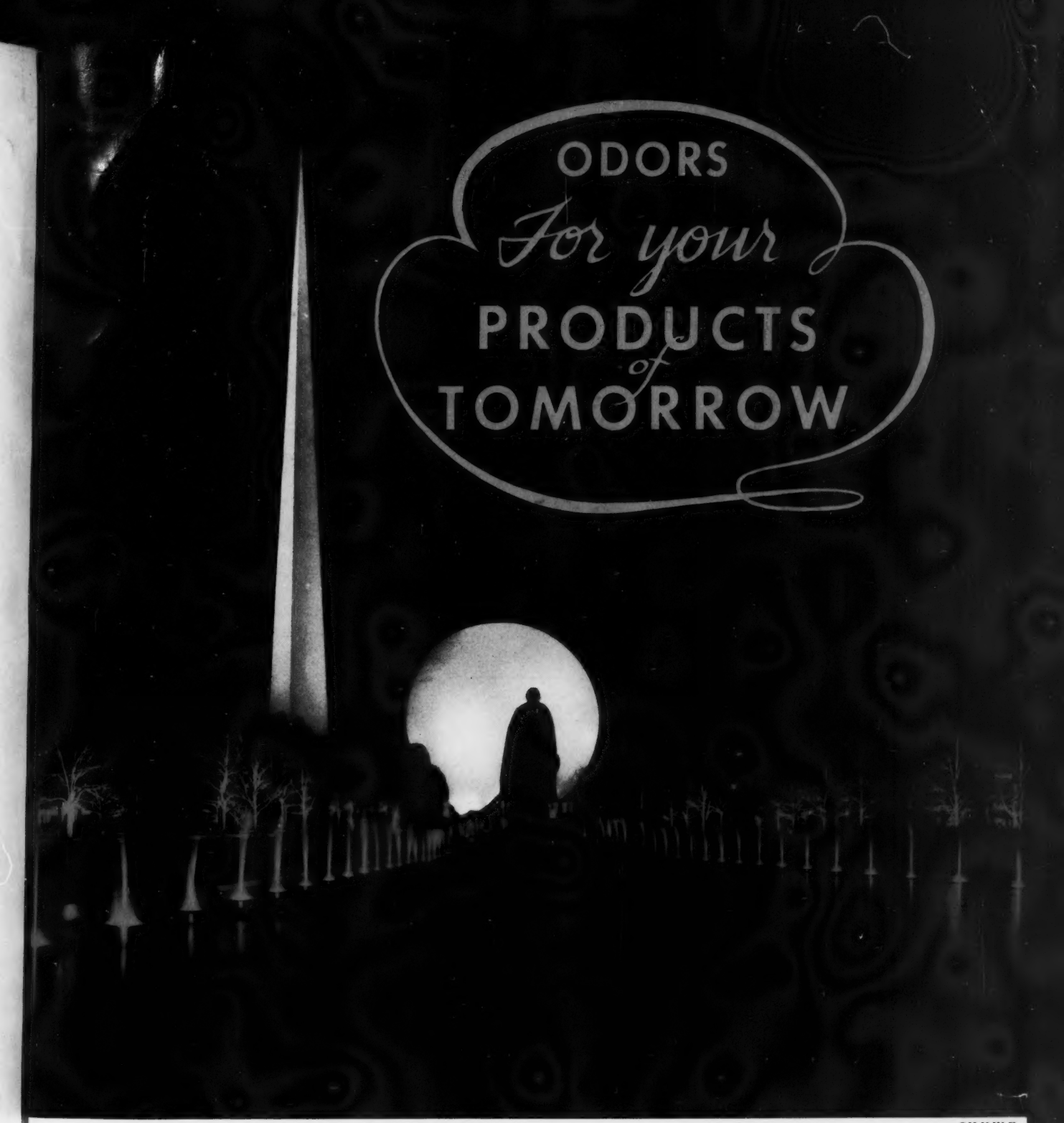
The plan to transfer jurisdiction of the Food and Drug Administration from the Department of Agriculture to the Public Health Service of the Federal Security Administration seems definitely slated to go into effect June 10th. The House voted disapproval of the change, but the Senate, by a vote of 46 to 34 refused to disapprove. As majorities of both houses were necessary to veto, the attempt to block the shift in authority was lost. During the Senate debate considerable objection to the transfer centered around the suspicion that giving jurisdiction of the FDA to the Public Health Service might lead ultimately to direct medical control of administration of the act. Fortunately for those who operate under the Insecticide Act of 1910, administration of this measure, it is understood, will remain under the Department of Agriculture.

* * *

Speaking of the government agencies and their activities, we understand that investigators of the Commission have been looking around in the insecticide industry lately. As a matter of fact, it is quite a problem to find an industry, some part of which has not been looked over of late by the F.T.C.

* * *

Just a reminder,—if you have received a subscription renewal notice or bill lately for *Soap & Sanitary Chemicals*, don't file it and forget it. Send in your check promptly and avoid missing any issues.



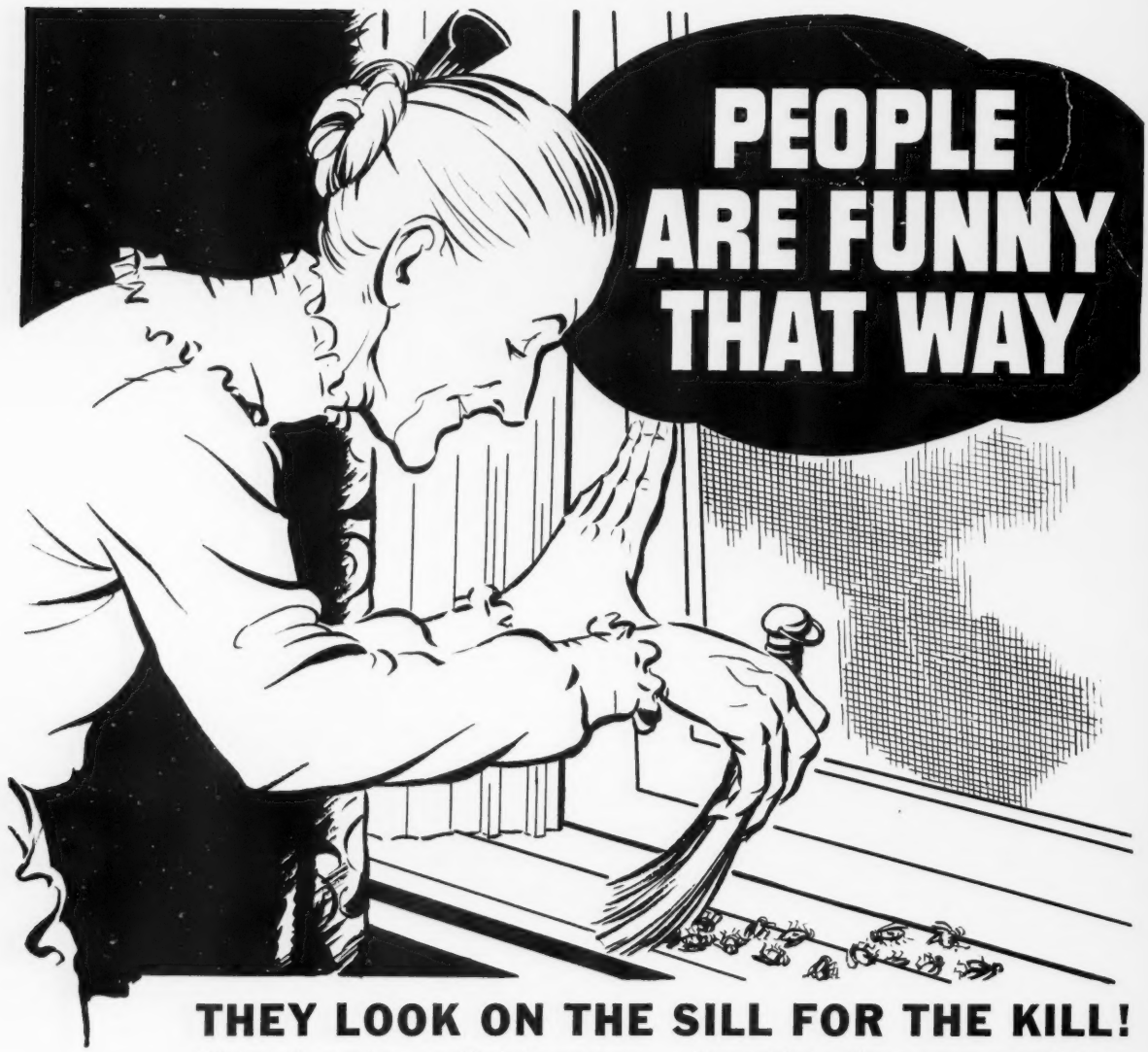
ANOTHER year, another New York World's Fair. New exhibits, new eye-openers for consumers, new products.

And at the same time, 1940 brings new unsolicited problems to all soap manufacturers. Ungerer & Co. is ready to assist you in solving any odor problem you may have with your products. We have new solutions for new problems, new answers for the old ones.

Attend the 1940 New York World's Fair if possible, and gain new inspiration. And "For Peace and Freedom" of mind let us assist you in solving the odor problems arising in your products, both your products of today and your Products of Tomorrow.

UNGERER & CO.

13-15 West 20th Street, New York



THEY LOOK ON THE SILL FOR THE KILL!

Kill 'em and sweep 'em away. That's the way housewives expect an insecticide to act. Kill at the end of 24 hours or 48 hours doesn't mean a thing to your customers.

Some synthetic active principles make a good record as to kill at the end of 24 or 48 hours when tested by the Peet Grady method. But how about the flies you can actually sweep out at the end of 10 minutes? This is the way your customers will judge your insecticide.

If you use the Peet Grady method, then you know that flies knocked down at the end of 10 minutes by some combination synthetic sprays are often so lively that it is not only difficult to pick them up, but practically impossible to sweep them up. Your housewife customers won't reorder on that kind of performance. They demand knock down and kill.

Your finished product is sure to get a high percentage of knock down and knock out if you use Pyrocide 20. The process used in manufacturing Pyrocide 20 removes "false" pyrethrins. Pyrocide 20 Deodorized—Clarified contains 2.5% pyrethrins by weight (Seil method) equivalent to 2.0 grams pyrethrins per 100cc.

Pyrocide 20 costs no more than other pyrethrum concentrates. Why fuss around with products less satisfactory? During manufacture, three analyses of Pyrocide 20 are made as a routine matter. The reputation of McLaughlin Gormley King, the house most experienced in producing standardized pyrethrum concentrates, stands behind every shipment of Pyrocide 20

McLAUGHLIN GORMLEY KING CO.
MINNEAPOLIS, MINNESOTA

PYROCIDE 20

THE PUREST FORM OF PYRETHRINS COMMERCIALLY AVAILABLE